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HAZARDOUS BUILDING MATERIALS SURVEY REPORT

230-232 Sussex Street

Sydney, NSW 2000

Report Number 610.14201.00100/01/HMR

6 February 2015

Meriton Group
Level 11, Meriton Tower
528 Kent Street
Sydney, NSW 2000

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HAZARDOUS BUILDING MATERIALS SURVEY REPORT

230-232 Sussex Street

Sydney, NSW 2000

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610.14201.00100/01/HMR	Revision 0	6 February 2015	Cassandra Fernandez	Neil Kumar	Neil Kumar

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1 SCOPE

SLR Consulting Australia Pty Ltd (SLR) was requested by Tom Hutchison of Meriton Group to undertake an inspection of 230-232 Sussex Street, Sydney NSW 2000 to ascertain the location, extent, type and condition of hazardous building materials such as asbestos, lead and Polychlorinated Biphenyls (PCBs). Synthetic Mineral Fibre (SMF) is generally not included as it is not a designated hazardous material. Upon completion of the on-site assessment, this report presents the results of the inspection.

2 INSPECTION DETAILS

2.1 Site Description

The survey was conducted at 230-232 Sussex Street, Sydney NSW 2000 on 29 January 2015. The site is located on the east side of Sussex Street. A Locality Map is presented in **Figure 1** overleaf. For the purpose of this report, Sussex Street is taken to run in a north to south direction, directly adjacent to the site. The survey was undertaken by Cassandra Fernandez.

The buildings consist of a Western and Eastern Wing with a Courtyard, two Enclosed Walkways between both wings and a Basement.

The Western Wing is a three storey building whilst the Eastern Wing is two storeys.

The buildings were un-occupied at the time of the inspection.

A Site Plan is presented in **Appendix B** and may be referred to for the locations described in this report.

Relevant photographs taken during the inspection are provided in **Appendix C**.

No access was available to some areas at the time of the inspection. Inaccessible areas are outlined in **Section 4.2** of this report.

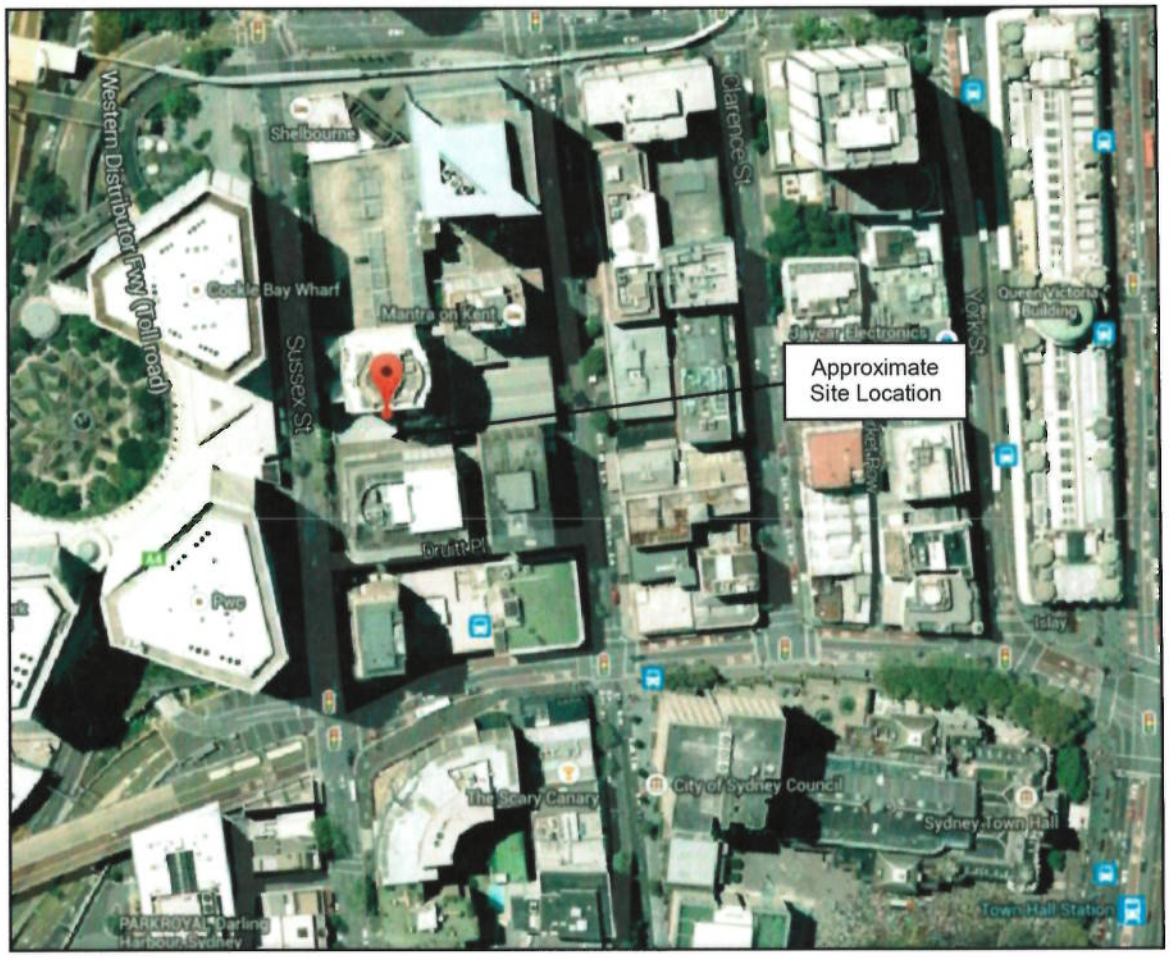


Figure 1: Site Location

Map reproduced with Google Maps.
Date Retrieved: 2 February 2015.

3 LIMITATIONS

Surveys are conducted in a conscientious and professional manner. The nature of the task and the likely disproportion between any damage or loss which might arise from the work or reports prepared, and the cost of our services, is such that SLR cannot guarantee that all hazardous building materials have been identified and/or addressed.

Due to the possibility of renovations and additions to the building(s) over time, ACMs may have been concealed (for example behind new walls, flooring, ceilings, within boxing, etc), such areas were inaccessible during the inspection. It is recommended that prior to any refurbishment/demolition works at the site that a full destructive asbestos building materials refurbishment/demolition survey is undertaken by a suitably qualified and experienced consultancy, such as SLR. If any materials reasonably suspected of containing asbestos are found on site, which are not identified within this report, the client's independent consultant, SLR, should be contacted to complete additional confirmatory sampling and analysis as required.

A change in building use/nature of activities could affect the control actions recommended within this report and a re-survey may be required.

Thus, while we carry out the work to the best of our ability, we totally exclude any loss or damages which may arise from services we have provided to Meriton Group and/or associated parties.

Where potentially hazardous materials are identified these are normally reported on to the best of the consultant's ability. Analysis is not normally included and there is no guarantee that all such materials have been identified and/or addressed.

All work conducted and reports produced by SLR are prepared for a particular Client's objective and are based on a specific scope, conditions and limitations, as agreed upon between SLR and the Client. Information and/or report(s) prepared by SLR may therefore not be suitable for any use other than the intended objective. No parties other than the Client should use any information and/or report(s) without first conferring with SLR.

Before passing on to a third party any information and/or report(s) prepared by SLR, the Client is to inform fully the third party of the objective and scope, and all limitations and conditions, including any other relevant information which applies to the information and/or report(s) prepared by SLR.

It is the responsibility of third parties to investigate fully to their satisfaction if any information and/or report(s) prepared by SLR are suitable for a specific objective.

The report(s) and/or information produced by SLR should not be reproduced and/or presented/reviewed except in full.

4 SURVEY STRATEGY

The purpose of this survey is to locate, as far as reasonably practicable, the presence, type and extent of any suspect ACMs in the building(s), to assess their condition, provide a suitable risk assessment/rating and recommended control actions based on the condition of the materials at the time of the survey.

The survey consisted of a visual inspection with limited sampling/analysis of materials undertaken by a trained and experienced surveyor.

Materials are assumed to contain asbestos where:

- Laboratory analysis has confirmed the presence of asbestos in a visually similar material; or
- Materials visually appear to be asbestos containing but no sample was collected, for example due to access restraints.

Samples are typically collected using a hand tool or core borer. Hand drills and other tools are used where required. Power tools were not used during the survey.

4.1 Sample Analysis

Samples obtained from materials suspected to contain asbestos are analysed by our 'In House' NATA accredited laboratory using a combination of stereo microscopy, polarised light microscopy and dispersion staining techniques. Due to the limited extent of asbestos fibres within certain manufactured or installed materials, including but not limited to, vinyl floor tiles and decorative sprayed coatings (such as vermiculite); and where the aforementioned analytical methods determine that asbestos was not detected, it may be advisable that additional analysis be considered using Scanning Electron Microscopy (SEM) or X-ray diffraction.

Lead paint spot tests are conducted using 5% Sodium Sulphide solution to detect lead in paint. A positive result by a spot test indicates a lead level greater than (>) 1%. The results of spot tests are generally only applicable to the layer of paint tested.

Settled dust was sampled and analysed for lead. Sampling and analysis was conducted in accordance with AS 4361.2-1998 *Guide to lead paint management Part 2: Residential and Commercial Buildings*. Briefly, this involved the collection of settled dust from a known surface area by wet wipe. The collected dust is then analysed in a laboratory by ICP-AES for total lead content. The total lead content and area sampled is then used to calculate a lead in dust loading value in mg/m^2.

Capacitors in old fluorescent light fittings are assumed to contain PCBs unless a more detailed inspection and/or laboratory analysis confirms otherwise. A more detailed inspection and/or laboratory analysis would require a qualified electrician to isolate and de-energise the light fittings.

4.2 Exclusions

Certain areas of the buildings were inaccessible at the time of the inspection. This includes areas/materials that were inaccessible due to being 'live electrical' or 'moving parts' equipment. **Table 1** lists those areas/materials that were inaccessible.

Table 1: Inaccessible Areas and/or Materials

Location	Explanation
Limited access into ceiling cavities	Ceiling cavities were viewed from access hatches only unless suitable walkways were present
No access into electrics	The electrics were 'live' at the time of the inspection
Basement Level	The Basement was inaccessible at the time of the inspection as Meriton Group could not locate keys.

Additionally, and unless specifically noted, the survey did not cover:

- Wall/ceiling panelling behind laminations/coverings.
- Concealed floor coverings beneath carpet or superficial floor coverings.
- Fuses within 'live' electrical panelling. Fuses of a certain age may contain asbestos containing flashguards.
- Hidden and/or inaccessible locations such as in or under concrete slabs, in or under vinyl/linoleum/carpet, wall cavities, hidden storage areas and the like. If the vinyl or linoleum is tested, this does not necessarily mean that the resin/glue is included in the analysis.
- Lift wells and inaccessible/unidentified shafts, cavities and the like.
- Air conditioning, heating, mechanical, electrical or other equipment.
- General exterior ground surfaces and subsurface areas e.g. asbestos in fill/soil.
- Materials dumped, hidden, or otherwise placed in locations which one could not reasonably anticipate.
- Materials other than normal building fabric, materials in laboratories or special purpose facilities and building materials that cannot be reasonably and safely assessed without assistance.

Limited access was available within the Ceiling Cavity Areas, Risers and Plant Room Areas at height due to the concentration of services, limited safe walking paths (where applicable) and lighting.

Materials other than asbestos, lead and PCBs are generally outside the scope of this investigation as identification can require specialised analysis/inspection techniques.

Settled dust is generally not sampled or commented on. Settled dust may contain hazardous materials, particularly if it is/was once in the vicinity of hazardous materials (such as asbestos containing materials or lead paint). It may also contain hazards originating from outside the building (such as lead from petrol combustion).

4.3 Asbestos Risk Assessment, Control Actions & Classification

4.3.1 Material Assessment

In order to assess the potential for fibre release from an Asbestos Containing Material (ACM) a Material Assessment is undertaken for each identified (sampled or assumed) material noted during the survey inspection.

The four principle parameters determining the amount of fibre released from an ACM when subject to disturbance are:

- Product type;
- Extent of damage or deterioration;
- Surface treatment; and
- Asbestos type.

Each of these variables are given a score of between 0 and 3 which can then be added together to obtain a Material Assessment Rating of between 2 and 12. A low Material Assessment Rating indicates a low potential for fibre release and a high Material Assessment Rating indicates a high potential for fibre release. Please note that all assumed ACMs are scored as crocidolite (ie Asbestos Type score = 3) unless there is strong evidence to show otherwise to indicate a worst case scenario. Non-asbestos containing materials are not scored.

The Material Assessment Algorithm used during the survey is provided in **Table 2** overleaf.

4.3.2 Risk Assessment Rating

The purpose of a Risk Assessment Rating is to allow informed decisions to be made about ACMs, including control measures or required remedial actions, induction and training, air monitoring, health surveillance requirements, etc. It also assists in the prioritisation of the implementation of management actions.

Further to the positive or assumptive identification of an ACM and the completion of the Material Assessment (**Section 4.3.1**), a Risk Assessment Rating is compiled for each item. The Risk Assessment Rating categories as detailed in **Table 3** have been compiled in order for appropriate ACM management procedures to be implemented.

The Risk Assessment Rating categories are described as 'High', 'Medium', 'Low', or 'Very low' and have been assigned to each positive or assumptive identification of ACMs during the survey. A 'High' Risk Assessment Rating indicates a material that will more readily release airborne fibers if disturbed.

Table 2: Asbestos Risk Assessment (Material Assessment) Algorithm

Sample variable		Score	Examples of scores
A	Product type (or debris from product)	1	Asbestos-reinforced composites (plastics, resins, mastics, roofing felts, vinyl floor tiles, semi-rigid paints or decorative finishes, BEBB, asbestos cement etc).
		2	AIB, millboards, other low-density insulation boards (LDB), asbestos textiles, gaskets, ropes and woven textiles, asbestos paper and felt.
		3	Thermal insulation (eg pipe and boiler lagging), sprayed asbestos, loose asbestos, asbestos mattresses and packing.
B	Extent of damage/deterioration	0	Good condition: no visible damage.
		1	Low damage: a few scratches or surface marks, broken edges on boards, tiles etc.
		2	Medium damage: significant breakage of materials or several small areas where material has been damaged revealing loose asbestos fibres.
		3	High damage or delamination of materials, sprays and thermal insulation. Visible asbestos debris.
C	Surface treatment	0	Composite materials that are sealed by nature (plastics, resins, mastics, roofing felts, vinyl floor tiles, semi-rigid paints or decorative finishes, BEBB), or Encapsulated FCS, AC
		1	Unsealed FCS, AC, or Encapsulated AIB, millboard, other LDB (with exposed face painted/encapsulated), asbestos textiles, gaskets, ropes and woven textiles, asbestos paper, card. Enclosed Insulation (lagging, sprays, loose asbestos, mattresses, packing).
		2	Unsealed AIB, millboard, other LDB, asbestos textiles, gaskets, ropes and woven textiles, asbestos paper and card, or Encapsulated Insulation (lagging, sprays, loose asbestos, mattresses, packing.
		3	Unsealed Insulation (lagging, sprays, loose asbestos, mattresses, packing).
D	Asbestos type	1	Chrysotile.
		2	Amphibole asbestos excluding crocidolite.
		3	Crocidolite.
Total			

Table 3: Risk Assessment Rating Based Upon Materials Assessment Algorithm

Score	Potential to release asbestos fibres
10 or more	High
7-9	Medium
5-6	Low
4 or less	Very Low

4.3.3 Control Actions

Based upon a combination of our surveyors judgment on site and the Risk Assessment Rating for each identified/assumed ACM noted on site, recommended Control Measures as detailed in **Table 4** have been applied to each occurrence in the Asbestos Containing Materials Register in **Section 5**.

4.3.4 ACM Classification

ACMs are classified as friable or non-friable in accordance with the *Work Health and Safety Regulations 2011*. SLR has classified all identified/assumed ACMs noted on site as friable or non-friable in accordance with the criteria set out in the Regulations (as noted in the Asbestos Containing Materials Register in **Section 5**). This will assist the Client with the on-going management of ACMs and any necessary abatement works.

Generally, asbestos abatement works require a license issued by a regulator. The requirement for an asbestos licence to undertake asbestos abatement works are as follows:

Class A (or friable) licence is required for works involving:
- Friable asbestos;
- Asbestos contaminated dust associated with the removal of friable asbestos.

Class B license (or bonded) (or Class A (or friable)) licence is required for works involving:
- More than $10m^2$ of non-friable asbestos;
- Asbestos contaminated dust associated with the removal of more than $10m^2$ of non-friable asbestos.

No license is required for works involving:
- Up to $10m^2$ of non-friable asbestos;
- Asbestos contaminated dust:
  - That is associated with the removal of up to $10m^2$ of non-friable asbestos.
  - That is not associated with the removal of friable/non-friable asbestos and is only a 'minor contamination'.

Table 4: Recommended Control Measures

Control Number	Action
C1	Manage *in-situ*
C2	Incorporate into a current / develop an Asbestos Management Plan
C3	Label as asbestos containing in accordance with Australian Standard *1319-1994 Safety Signs for the Occupational Environment*
C4	Re-inspect conditions every 5 years or sooner if deemed necessary in accordance with the *Work Health and Safety Regulations 2011 & Code of Practice 'How to Manage and Control Asbestos in the Workplace [Safe Work Australia (2011)]*
C5	Consider further sampling/analysis to establish whether asbestos is present within the material
C6	Consider further sampling/analysis to establish whether asbestos is present within the associated dust
C7	Consider further sampling/analysis to establish whether asbestos is present within the sub-soil
C8	Seal damaged edges with an appropriate sealant such as Emerclad paint
C9	Encapsulate/enclose in accordance with the *Work Health and Safety Regulations 2011 & Code of Practice 'How to Safely Removal Asbestos [Safe Work Australia (2011)]*
C10	Seal-off area and erect appropriate warning signage in accordance with Australian Standard *1319-1994 Safety Signs for the Occupational Environment*
C11	Undertake a suitable and sufficient Risk Assessment prior to access, which may include the use of appropriate PPE & RPE
C12	Restrict access to maintenance/service personnel
C13	Restrict access to all personnel
C14	Remove in accordance with the *Work Health and Safety Regulations 2011 & Code of Practice 'How to Safely Remove Asbestos [Safe Work Australia (2011)]*
C15	Remove in accordance with the *Work Health and Safety Regulations 2011 & Code of Practice 'How to Safely Remove Asbestos [Safe Work Australia (2011)]* prior to any works in the area that may disturb the material
C16	Undertake a dust sampling regime within the area in accordance with the *Work Health and Safety Regulations 2011 & Code of Practice 'How to Manage and Control Asbestos in the Workplace [Safe Work Australia (2011)]*
C17	Undertake airborne fibre monitoring within the area in accordance with the *Work Health and Safety Regulations 2011*, *Code of Practice 'How to Manage and Control Asbestos in the Workplace [Safe Work Australia (2011)]* and *Code of Practice 'How to Safely Remove Asbestos [Safe Work Australia (2011)]*
C18	A detailed roof inspection by a competent person, such as SLR, is recommended to investigate the potential for contamination in areas such as gutters, drains/pipes and air conditioning systems. Subsequent to this detailed inspection, recommendations can be made about the condition of the roof and an appropriate course of action detailed.

5 HAZARDOUS MATERIALS REGISTER

5.1 Asbestos

The following tables are a register of all identified hazardous materials on site, confirmed through analysis or assumed materials deemed to be homogenous or consistent in appearance and manufacture to similar samples collected/analysed. This Summary of Hazardous Materials should be read in conjunction with all sections of this report.

Item Location & Material Type	Sample No./ Assumed	Photo No.	Approx. Extent	Non-Friable/ Friable	Product Type (A)	Extent of Damage /Deterioration (B)	Surface Treatment (C)	Asbestos Type (D)	Risk Assessment (Material Assessment) Score & Rating (A+B+C+D)	Recommended Control Actions	Comments
Western Wing – Building Interior											
Ground Floor, Southern Section, Electrical Distribution Cupboard, Western BEBB	610.14201.00100/ 1	1	<1 m²	Non-friable	1	1	0	1	3 – Very Low	C1, C2, C3, C4, C6, C8, C11, C12, C15	N/A
Ground Floor, Southern Section, Electrical Distribution Cupboard, Eastern BEBB	Visually similar to item ref: 610.14201.00100/ 1	2	<1 m²	Non-friable	1	1	0	1	3 – Very Low	C1, C2, C3, C4, C6, C8, C11, C12, C15	N/A
Ground Floor, Northern Section, North Eastern Toilet Airlock Room, FCS wall sheeting (all walls)	610.14201.00100/ 2	3	6 m²	Non-friable	1	0	0	1	2 – Very Low	C1, C2, C3, C4, C15	N/A
Ground Floor, Northern Section, North Eastern Toilet, FCS wall sheeting (all walls)	Visually similar to item ref: 610.14201.00100/ 2	4	10 m²	Non-friable	1	0	0	1	2 – Very Low	C1, C2, C3, C4, C15	N/A
First Floor, Female Toilet Airlock Room, FCS wall sheeting (all walls)	610.14201.00100/ 4	5	17 m²	Non-friable	1	1	0	1	3 – Very Low	C1, C2, C3, C4, C8, C15	N/A
First Floor, Female Toilet Airlock Room, FCS ceiling sheeting	Visually similar to item ref: 610.14201.00100/ 4	6	6 m²	Non-friable	1	0	0	1	2 – Very Low	C1, C2, C3, C4, C15	N/A

Item Location & Material Type	Sample No./ Assumed	Photo No.	Approx. Extent	Non-Friable/ Friable	Product Type (A)	Extent of Damage /Deterioration (B)	Surface Treatment (C)	Asbestos Type (D)	Risk Assessment (Material Assessment) Score & Rating (A+B+C+D)	Recommended Control Actions	Comments
Western Wing – Building Interior (continued)											
First Floor, Female Eastern Toilet, FCS wall sheeting (all walls)	Visually similar to item ref: 610.14201.00100/4	7	9 m²	Non-friable	1	0	0	1	2 – Very Low	C1, C2, C3, C4, C15	N/A
First Floor, Female Western Toilet, FCS wall sheeting (all walls)	Visually similar to item ref: 610.14201.00100/4	8	9 m²	Non-friable	1	0	0	1	2 – Very Low	C1, C2, C3, C4, C15	N/A
First Floor, Male Toilet Airlock Room, FCS wall sheeting (all walls)	Visually similar to item ref: 610.14201.00100/4	9	14 m²	Non-friable	1	0	0	1	2 – Very Low	C1, C2, C3, C4, C15	N/A
First Floor, Male Toilet, FCS wall sheeting (all walls)	Visually similar to item ref: 610.14201.00100/4	10	9 m²	Non-friable	1	0	0	1	2 – Very Low	C1, C2, C3, C4, C15	N/A
Second Floor, Western Electrical Distribution Cupboard, upper BEBB	610.14201.00100/5	11	<1 m²	Non-friable	1	1	0	1	3 – Very Low	C1, C2, C3, C4, C6, C8, C11, C12, C15	N/A
Second Floor, Western Electrical Distribution Cupboard, lower BEBB	610.14201.00100/6	12	<1 m²	Non-friable	1	1	0	1	3 – Very Low	C1, C2, C3, C4, C6, C8, C11, C12, C15	N/A
Second Floor, Male Toilet Airlock Room, FCS wall sheeting (all walls)	610.14201.00100/7	13	10 m²	Non-friable	1	0	0	1	2 – Very Low	C1, C2, C3, C4, C15	N/A
Second Floor, Male Toilet, FCS wall sheeting (all walls)	Visually similar to item ref: 610.14201.00100/7	14	6 m²	Non-friable	1	0	0	1	2 – Very Low	C1, C2, C3, C4, C15	N/A

Item Location & Material Type	Sample No./ Assumed	Photo No.	Approx. Extent	Non-Friable/ Friable	Product Type (A)	Extent of Damage /Deterioration (B)	Surface Treatment (C)	Asbestos Type (D)	Risk Assessment (Material Assessment) Score & Rating (A+B+C+D)	Recommended Control Actions	Comments
Western Wing – Building Interior (continued)											
Second Floor, Male Shower, FCS wall sheeting (all walls)	Visually similar to item ref: 610.14201.00100/7	15	3 m²	Non-friable	1	0	0	1	2 – Very Low	C1, C2, C3, C4, C15	N/A
Second Floor, Female Toilet Airlock Room, FCS wall sheeting (all walls)	Visually similar to item ref: 610.14201.00100/7	16	14 m²	Non-friable	1	0	0	1	2 – Very Low	C1, C2, C3, C4, C15	N/A
Second Floor, Female Toilet, FCS wall sheeting (all walls)	Visually similar to item ref: 610.14201.00100/7	17	6 m²	Non-friable	1	0	0	1	2 – Very Low	C1, C2, C3, C4, C15	N/A
Eastern Wing – Building Interior											
Ground Floor, FCS ceiling sheeting within ceiling cavity	610.14201.00100/8	18	>70 m²	Non-friable	1	3	0	3	7 – Medium	C2, C3, C4, C6, C8, C9, C10, C11, C13 C14, C15, C16	N/A
Courtyard – Building Exterior											
FCS shadow-lining to Northern and Southern external walls of Enclosed Walkways	610.14201.00100/10	19	20 m²	Non-friable	1	1	0	3	5 – Low	C1, C2, C3, C4, C8, C15	N/A

Refer to related notes on **Page 18.**

5.2 Lead & PCBs

Material Type and Location	Material Status	Sample No./ Assumed	Photo No.	Approx. Extent	Condition	Potential for Disturbance	Relative Risk of Exposure	Comments
Western Wing – Building Interior								
Ground Floor, Northern Section, Electrical Distribution Cupboard, green paint to brick wall (top layer)	Contains > 1% Lead	610.14201.00100/ ST1	20	3 m^2	Poor, flaking in places	Medium	Low	N/A
First Floor, Males Toilet Airlock Room. 10cm^2 settled dust sample from ceiling cavity	Contains 230 mg/m^2 Lead	610.14201.00100/ LD1	21	> 200 m^2	The material is dust, so is in a poor state of repair and prone to disturbance.	Low	Low	N/A
Second Floor, Hallway adjacent Female Toilet. 10cm^2 settled dust sample from ceiling cavity	Contains 970 mg/m^2 Lead	610.14201.00100/ LD2	22	> 200 m^2	The material is dust, so is in a poor state of repair and prone to disturbance.	Low	Low	N/A

Refer to related notes on **Page 18**.

Notes:

- FCS = Fibre Cement Sheeting; BEBB = Black Electrical Backing Board; PCBs = Polychlorinated Biphenyls; N/A = Not Applicable.
- This Summary of Hazardous Materials should be read in conjunction with all sections of this report.
- Sample analysis/test results are detailed in **Section 6** of this report.
- All other similar occurrences of the ACMs identified in the summary table above should be assumed to contain asbestos, and treated accordingly, unless sampling and analysis confirms otherwise.
- Dust within the Electrical Distribution Cupboards should be assumed to be contaminated with asbestos fibres; unless a dust sampling regime undertaken by a Consultant proves otherwise. As a precautionary measure, appropriate PPE should be used when accessing the Electrical Distribution Cupboard/BEBB.
- All other similar occurrences of the lead listed in the above summary table should be assumed to contain corresponding levels of lead.
- All other similar occurrences of lead in paint listed in the above summary table should be assumed to contain corresponding levels of lead.
- Most of the fluorescent light fittings sighted are of newer styles which are unlikely to house capacitors that contain PCBs. Should any fluorescent light fittings of an older style be present they may house capacitors that contain PCBs, and should be assumed to do so unless a more detailed inspection and/or sample analysis confirms otherwise. A more detailed inspection and/or sample analysis requires a qualified electrician to isolate and de-energise the lights.
- The areas and approximate extents given above are approximates only and should not be used for the purpose of removal.
- Any actions taken to control hazardous materials subsequent to this report are to be recorded in the Hazardous Materials Control Log attached in **Appendix A**.
- Refer to the General Information attached in **Appendix D**.

6 SAMPLE ANALYSIS/TEST RESULTS

Table 5: Asbestos Sample Analysis Results

Sample Number	Sample Type	Sample Location	Analysis Result
Western Wing – Building Interior			
610.14201.00100/1	BEBB	Ground Floor, Southern Section, Electrical Distribution Cupboard, Western BEBB	**Chrysotile asbestos detected**
610.14201.00100/2	FCS	Ground Floor, Northern Section, North Eastern Toilet Airlock Room, FCS wall sheeting (all walls)	**Chrysotile asbestos detected** (organic fibres detected)
610.14201.00100/3	BEBB	Ground Floor, Northern Section, Electrical Distribution Cupboard, BEBB	No asbestos detected (organic fibres detected)
610.14201.00100/4	FCS	First Floor, Female Toilet Airlock Room, FCS wall sheeting (all walls)	**Chrysotile asbestos detected** (organic fibres detected)
610.14201.00100/5	BEBB	Second Floor, Western Electrical Distribution Cupboard, upper BEBB	**Chrysotile asbestos detected**
610.14201.00100/6	BEBB	Second Floor, Western Electrical Distribution Cupboard, lower BEBB	**Chrysotile asbestos detected**
610.14201.00100/7	FCS	Second Floor, Male Toilet Airlock Room, FCS wall sheeting (all walls)	**Chrysotile asbestos detected** (organic fibres detected)
Eastern Wing – Building Interior			
610.14201.00100/8	FCS	Ground Floor, FCS ceiling sheeting within ceiling cavity	**Chrysotile, amosite & crocidolite asbestos detected**
Courtyard – Building Exterior			
610.14201.00100/10	FCS	FCS shadow-lining to Northern and Southern external walls of Enclosed Walkways	**Chrysotile, amosite & crocidolite asbestos detected**
610.14201.00100/11	FCS	FCS Northern ceiling sheeting of Courtyard	No asbestos detected (organic fibres detected)

Notes:

FCS = Fibre Cement Sheeting; BEBB = Black Electrical Backing Board.

Sample No.610.14201.00100/9 does not form part of this report. Please refer to SLR Consulting Australia Asbestos Analytical Report reference 610.14201.00100/01/ANA dated 6 February 2015.

Table 6: Lead Paint Spot Tests Analysis Results

Test Number	Test Location	Test Result
Western Wing – Building Interior		
610.14201.00100/ST1	Ground Floor, Northern Section, Electrical Distribution Cupboard, green paint to brick wall (top layer)	**Positive (> 1% Lead)**
Eastern Wing – Building Interior		
610.14201.00100/ST2	Ground Floor, white paint to timber frames within ceiling cavity	Negative (< 1% Lead)

Table 7: Lead in Dust Analysis Results

Test Number	Test Location	Test Result
Western Wing – Building Interior		
610.14201.00100/LD1	First Floor, Males Toilet Airlock Room. 10cm^2 settled dust sample from ceiling cavity	230 mg/m^2 Lead
610.14201.00100/LD2	Second Floor, Hallway adjacent Female Toilet. 10cm^2 settled dust sample from ceiling cavity	970 mg/m^2 Lead

7 RECOMMENDATIONS

As previously detailed in the Scope (**Section 1**), SLR were appointed to complete a survey and assessment of 230-232 Sussex Street, Sydney NSW 2000 with regards to the identification of hazardous materials. The extent of the inspection and samples collected for subsequent analysis was completed in order to confirm, as far as reasonably practicable, the location, condition and risk presented by hazardous materials remaining *in-situ* (and was based on the level of access available).

Further to the completion of the on-site investigation and collection/analysis of samples, there are detailed site/work-specific requirements and precautions that must be taken in the management, control and removal of hazardous materials. In addition to those listed on the Hazardous Materials Register (**Section 5**), the following are some general recommendations and precautions that should be considered. Detailed documents, which may include Management Plans, Scope of Works, Safe Work Method Statements and Risk Assessments, should be prepared to appropriately address health and safety issues associated with specific work and site conditions.

7.1 Asbestos

- This document should be held as a Hazardous Materials Register of the areas inspected and updated every 5 years or earlier where ACMs have been disturbed or a risk assessment indicates the need for re-assessment. All occupiers of the workplace are to be provided with a copy of this register and all updates to it.
- If any material that may contain asbestos is found on site the material should be sent for identification and expert advice sought. The material should be assumed to contain asbestos in the interim.
- As a precautionary measure, all materials, which may contain asbestos, should be assumed to contain asbestos and treated appropriately until sampling and analysis confirms otherwise.
- In order to comply with the *Work Health and Safety Regulations 2011*, any action taken to control asbestos and ACM in the place of work, or in plant at the place of work, is to be recorded in this register. These details are to be recorded in the Asbestos Control Log attached in **Appendix A**.
- All non-friable ACMs in an in-tact condition may remain *in-situ* provided they are not drilled, ground or otherwise disturbed. If generated, broken pieces are to be removed as soon as practicable. As part of good ongoing management we recommend regular inspections of ACMs left *in-situ* to check the condition of these materials.
- As a precautionary measure, any minor damaged, exposed/damaged edges of ACMs remaining *in-situ* may be sealed with an appropriate sealant, such as Emerclad paint, to minimise the risk of generating airborne asbestos fibres if/when these materials are disturbed.
- Any areas of the workplace that contain ACM including plant, equipment and components should be signposted with appropriate warning signs to ensure that asbestos is not unknowingly disturbed without the correct precautions being taken. These signs should be placed at all the main entrances to the work areas where asbestos is present and should conform with Australian Standard 1319-1994 *Safety Signs for the Occupational Environment*.
- All significantly damaged ACMs should be removed as soon as possible.
- If asbestos materials become significantly damaged, weathered and/or produce visible dust or significant debris, then health and safety management works are likely to be required. A suitably qualified and experienced consultant, such as SLR, can advise and assist in carrying out such works.
- Prior to renovation or demolition works a refurbishment/demolition asbestos building materials survey should be undertaken by a suitable qualified and experience consultancy, such as SLR.
- All asbestos-containing materials are to be removed prior to refurbishment or demolition.

- Prior to asbestos abatement works, a Technical Scope of Works (Work Plan) for asbestos removal should be prepared by a suitably qualified and experienced consultant, such as SLR, detailing the procedures and precautions for asbestos works/removal.
- Generally, all asbestos removal/decontamination should be undertaken by a licensed, experienced Asbestos Removal Contractor working in accordance with the above-mentioned Scope of Works.
- Safe Work Australia requires an Asbestos Licence for the removal of friable asbestos and more than 10m^2 of non-friable asbestos. All licensable asbestos works require WorkCover NSW notification.
- Each licensed asbestos removal contractor must have an approved "Safe Work Method Statements" and "Risk Assessments" prior to the commencement of work.
- According to the *Code of Practice How to Safely Remove Asbestos 2011*, air monitoring should be performed whenever ACMs are being removed to ensure that the control measures are effective. It is mandatory to undertake air monitoring when removing friable asbestos. Once removal is complete the area should be inspected by a suitably qualified and experienced consultant, such as SLR, and a clearance certificate issued. Obtaining a clearance certificate following friable asbestos removal is mandatory.
- The consultant conducting the air monitoring and clearance inspection should report directly to the client/principal contractor and be independent of the Asbestos Removal Contractor.
- Refer to the General Information attached in **Appendix D** of this report.

7.2 Lead

7.2.1 Lead in Paint

Paints containing lead levels greater than **1%** lead were identified during the survey.

Paints of 1% or more lead content are generally considered to be lead containing; however the dry sanding of paints with even 0.25% lead can result in the release of unacceptable levels of lead containing dust.

As a precautionary health measure and to prevent contamination to surrounding areas, flaking/deteriorated lead containing paint should be treated as soon as practicable. Treatment may include the removal of flaking/deteriorated paint (using the appropriate procedures and precautions) before surfaces are repainted.

Dust on surfaces adjacent to flaking paint should be assumed to contain elevated levels of lead. Such dust should be appropriately removed as soon as practicable.

Procedures and precautions detailed in Australian Standard AS 4361.2-1998 *Guide to lead paint management Part 2: Residential and Commercial Buildings*, *National Standard for the Control of Inorganic Lead at Work* [NOHSC: 1012 (1994)] and the *National Code of Practice for the Control and Safe Use of Inorganic Lead at Work* [NOHSC: 2015 (1994)] should be followed in the treatment and management of paint containing lead.

Refer to the General Information in **Appendix D** of this report.

7.2.2 Lead in Dust

Australian Standard AS 4361.2-1998 *Guide to lead paint management Part 2: Residential and Commercial Buildings* does not offer any general guidance on lead levels in dust but it does have surface dust loading values as acceptance levels after lead paint management activities. The acceptance levels for surface dust are:

- Interior floors 1 mg/m^2 (as lead)
- Interior window sills 5 mg/m^2 (as lead)
- Exterior surfaces 8 mg/m^2 (as lead)

SLR uses the Australian Standard levels above as a guide in assessing lead dust risks. These figures can also be used to assess the risk of exposure from other lead sources.

The acceptance level of lead in dust for exterior surfaces is considered the most appropriate guideline for comparison for lead in ceiling dust.

The lead content in the following dust samples were significantly above the guideline level (8 mg/m^2):

- Sample No **610.14201.00100/LD1 - 230 mg/m^2 (Western Wing - First Floor, Males Toilet Airlock Room. 10cm^2 settled dust sample from ceiling cavity**).
- Sample No **610.14201.00100/LD2 - 970 mg/m^2 (Western Wing - Second Floor, Hallway adjacent Female Toilet. 10cm^2 settled dust sample from ceiling cavity**).

With due consideration of the age of the building, past experience and the sample analysis results, all dust within ceiling cavities throughout the buildings should be considered to contain potentially hazardous levels of lead.

If any lead contaminated/potentially contaminated dust is encountered on site then access to the material should be appropriately restricted and advice sought from a suitably qualified and experienced consultant, such as SLR.

Generally the inspected ceiling spaces were well sealed and provide limited opportunity for ceiling dust to enter the interior occupied space of the building and expose occupants.

The ceiling dust containing elevated levels of lead may remain in place provided that:

- Access is restricted to ceiling spaces where elevated levels of lead in dust are likely to occur and a management plan is implemented to control the risk of human exposure to lead in ceiling dust. Ceiling manholes should be labelled to indicate the presence of lead in the ceiling dust.

- Any persons wishing to access ceiling cavities containing elevated levels of dust are to undertake a suitable and sufficient Risk Assessment prior to doing so, the results of which may included the use of appropriate Personal Protective Equipment (PPE) such as disposable coveralls and respiratory protection.

Appropriate procedures and precautions should be taken during refurbishment/demolition works involving ceiling spaces containing elevated levels of lead in dust. Procedures and precautions should control human exposure to lead in ceiling dust to an acceptable level and contain contamination to prevent spreading to surrounding areas. Depending on the nature and extent of refurbishment/demolition works, procedures and precautions may include:

- Workers to wear appropriate PPE;
- Ceiling dust to be sprayed with a dilute Polyvinyl Acetate (PVA) emulsion to restrict the ability of the dust to become airborne; and
- Vacuuming the ceiling free of dust before the application of a dilute PVA spray.

All interior or ceiling space decontamination work is to be undertaken by an experienced contractor with appropriate approved equipment including disposable coveralls, respiratory protection and vacuum cleaners fitted with a HEPA filter. A written site-specific occupational health and safety plan and work method statement should be prepared by the contractor prior to the commencement of the removal works.

All lead removal works should be supervised by a suitably experienced and competent consultant, such as SLR, who will issue a clearance report upon satisfactory completion of the work.

Airborne lead monitoring is recommended during all lead removal/decontamination works.

Refer to General Information in **Appendix D** of this report.

7.2.3 Metallic Lead

Within the scope and limitations of the investigation undertaken, no metallic lead was identified during the survey.

Metallic lead should not be ground, scraped, sanded, melted or otherwise disturbed to produce lead dust or vapours without the implementation of a suitable and sufficient risk assessment and the use of appropriate procedures and precautions. Procedures and precautions may include the use of appropriate Personal Protective Equipment (PPE) and control measures to ensure personnel are not exposed to lead materials or do not cause contamination of surrounding areas.

Precautions and procedures detailed in the *National Standard for the Control of Inorganic Lead at Work* [NOHSC:1012(1994)] and the *National Code of Practice for the Control and Safe Use of Inorganic Lead at Work* [NOHSC:2015 (1994)] should be followed in the treatment and management of metallic lead.

Refer to General Information in **Appendix D** of this report.

7.3 PCBs

Within the scope and limitations of the investigation undertaken, no old fluorescent light fittings were identified during the survey.

PCBs are assumed to be present in older fluorescent light fittings unless a more detailed inspection and/or sample analysis indicates otherwise. Sampling or a more detailed inspection would require the presence of a qualified electrician to electrically isolate and de-energise the light fittings.

PCBs are a scheduled waste with strict guidelines regarding transport and handling. PCB work is to be conducted in accordance with the *Environmental Protection & Heritage Council's Polychlorinated Biphenyls Management Plan, Revised Edition April 2003*. This includes:

- Prior to demolition when the power is disconnected, inspect the light fittings;
- Metal PCB containing capacitors are to be removed, placed in plastic lined 200 litre drums and disposed of as PCB Scheduled Waste. Any light fittings that show signs of oil staining from capacitors are to be disposed of as PCB contaminated;
- Protective clothing including eye protection, PCB resistant gloves and overalls are to be worn;
- Contaminated gloves and disposable coveralls are to be disposed of as PCB contaminated waste; and
- Contractors licensed to transport and handle PCBs must be used for transport and disposal. PCB is a scheduled waste with strict guidelines regarding transport and handling.

Refer to General Information in **Appendix D** of this report.

8 CONCLUSIONS

- Hazardous materials have been identified and/or assumed at the site in the following forms:
  - ACMs;
  - Lead in paint; and
  - Lead in dust;
- This document should be held as a Hazardous Materials Register of the areas inspected and updated every 5 years or earlier where hazardous materials have been disturbed or a risk assessment indicates the need for re-assessment. All occupiers of the workplace are to be provided with a copy of this register and all updates to it.
- If any material that may be hazardous is found on site the material should be sent for identification and expert advice sought. The material should be assumed to be hazardous in the interim.
- In order to comply with the *Work Health and Safety Regulations 2011*, any action taken to control ACMs in the place of work, or in plant at the place of work, is to be recorded in this register. These details are to be recorded in the Asbestos Materials Control Log attached in **Appendix A**.
- All non-friable ACMs in an in-tact condition may remain *in-situ* provided they are not drilled, ground or otherwise disturbed. If generated, broken pieces are to be removed as soon as practicable. As a part of good ongoing management we recommend regular inspections of asbestos materials left *in-situ* to check the condition of these materials.

9 LEGISLATION, GUIDELINES AND REGULATIONS

- Work Health and Safety Act 2011
- Work Health and Safety Regulations 2011
- Code of Practice for How to Safely Remove Asbestos [Safe Work Australia (2011)]
- Code of Practice for How to Manage and Control Asbestos in the Workplace [Safe Work Australia (2011)]
- Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres 2nd Edition [National Occupational Health and Safety Commission: 3003 (2005)]
- National Code of Practice for the Control of Workplace Hazardous Substances [National Occupational Health and Safety Commission: 2007 (1994)]
- Protection of the Environment Operations Act 1997
- Waste Avoidance and Resource Recovery Act 2001
- The special conditions applicable to the Transport of Asbestos Waste (Categories 1 and 2) as laid down by the Waste Recycling and Processing Service
- AS/NZS 1716-2003 - Respiratory Protective Devices
- AS/NZS 1715-1994 - Selection, Use and Maintenance of Respiratory Protective Devices
- AS 2601-2001 - The Demolition of Structures
- AS 1319-1994 Safety Signs for the Occupational Environment

10 CLOSURE

This report has been prepared by SLR Consulting Australia Pty Ltd with all reasonable skill, care and diligence, and taking account of the manpower and resources devoted to it by agreement with the client. Information reported herein is based on the interpretation of data collected and has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of Meriton Group. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the client and others in respect of any matters outside the agreed scope of the work.

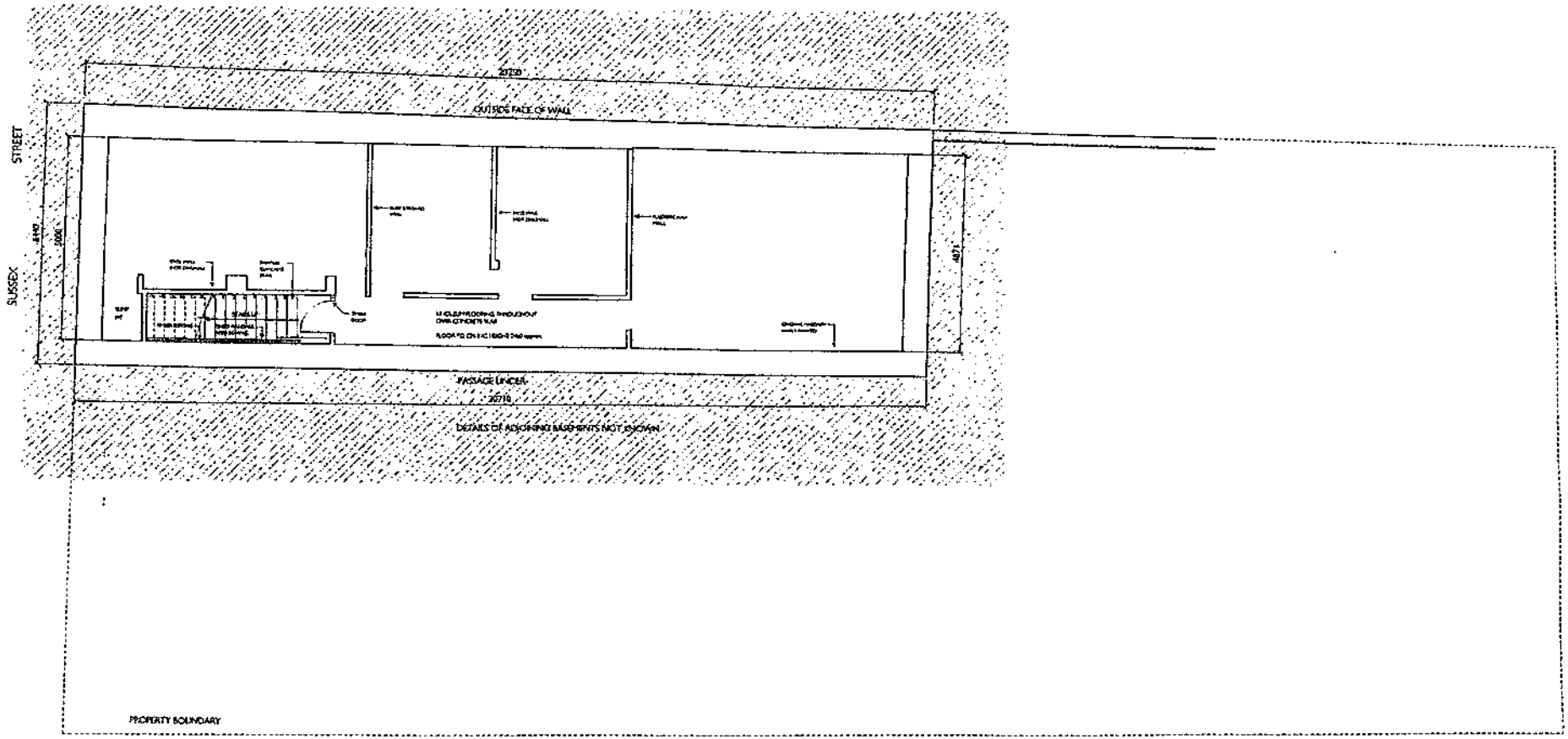
HAZARDOUS MATERIALS CONTROL LOG

To comply with the *Work Health and Safety Regulations 2011*, all actions taken to control asbestos and asbestos containing materials are to be recorded in the table below. It is recommended that similar details also be recorded for any other hazardous materials identified.

NAME	COMPANY	DATE	HAZARDOUS MATERIAL RELATED WORK UNDERTAKEN (Include any assessment concerning asbestos that took place before the work was carried out)	REFERENCE NUMBER (Include sample numbers, report numbers, quote number and/or purchase order number etc)
Cassandra Fernandez	SLR Consulting Australia Pty Ltd	29 January 2015	Hazardous Building Materials Survey	Report No 610.14201.00100/01/HMR
Cassandra Fernandez	SLR Consulting Australia Pty Ltd	6 February 2015	Asbestos Analytical Report	Report No 610.14201.00100/01/ANA

SITE PLAN

Please Refer to Overleaf.



1 BASEMENT LEVEL PLAN
SCALE 1 : 50 @ A1

SOURCES

SURVEY DRAWINGS BY HANNONG SHEARER & CO PTY LTD OCTOBER 1996

FIELD SURVEY BY DICKSON ROTHSCHILD ARCHITECTS

PHOTOGRAPHIC INTERPOLATION BY DICKSON ROTHSCHILD ARCHITECTS

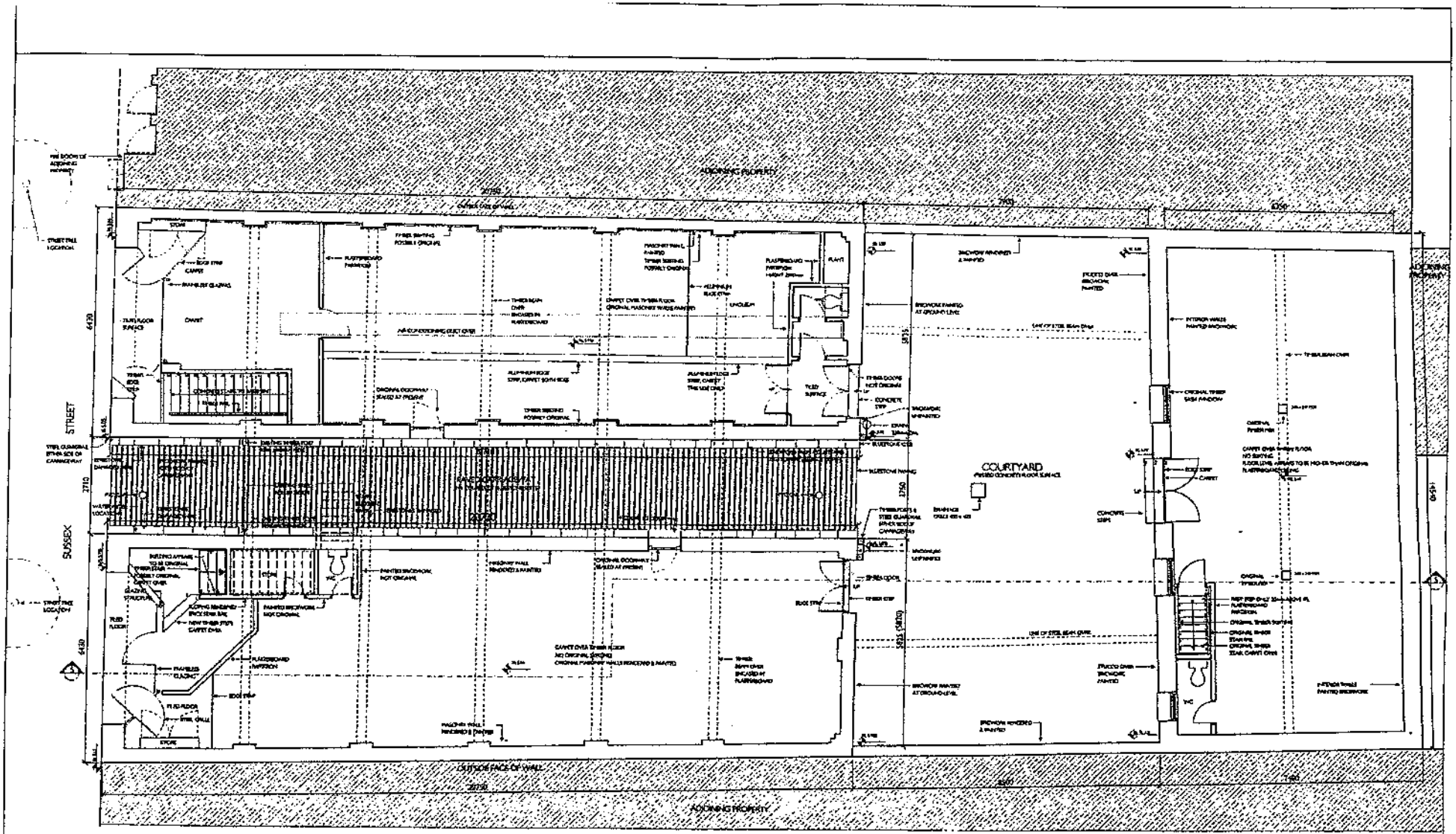
MEASURED DRAWINGS

230-232 SUSSEX STREET, SYDNEY

DICKSON ROTHSCHILD ARCHITECTS

Project No: 97-016.03 Dwg. No: 01/03 September, 1997

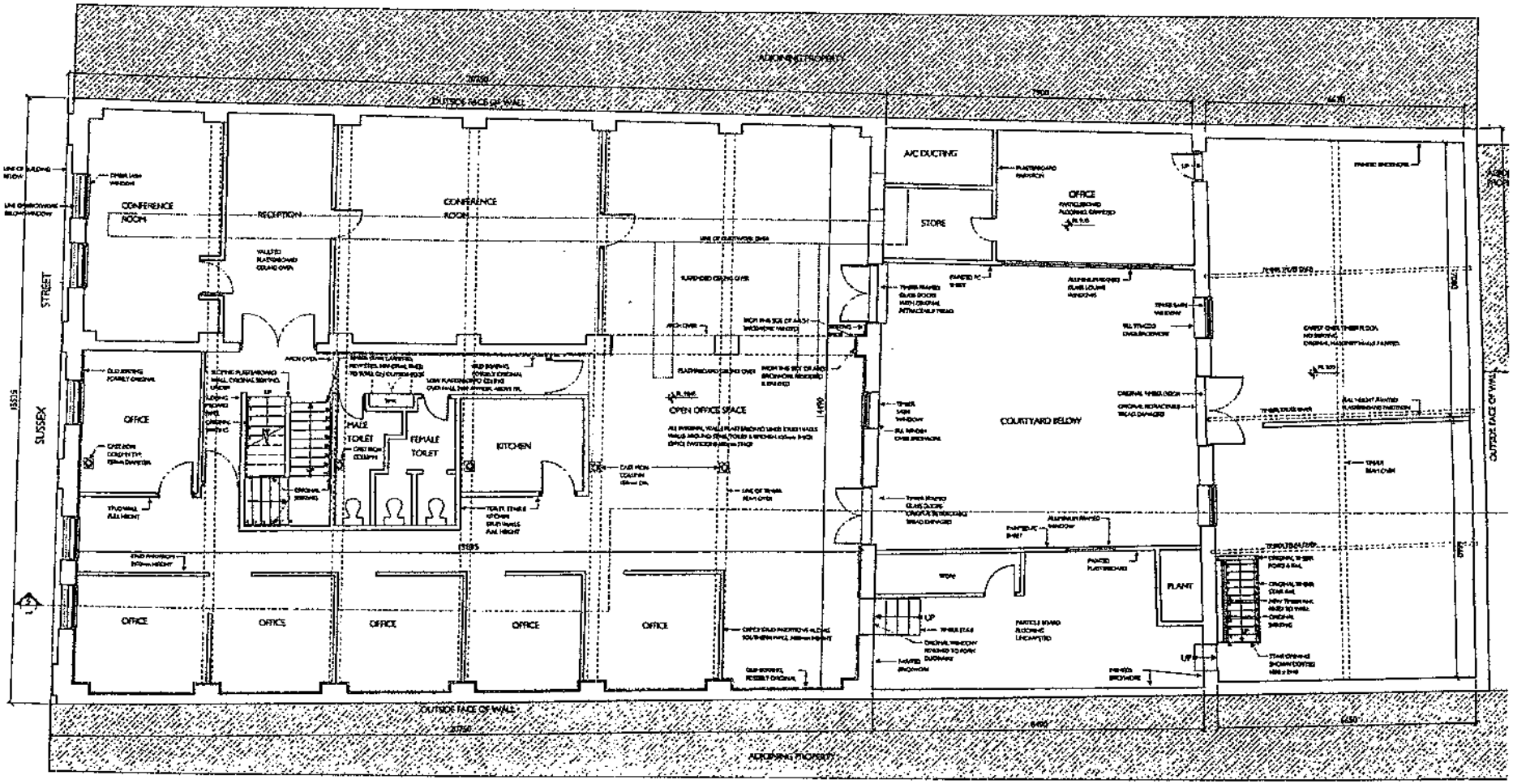
N



2 GROUND FLOOR PLAN
SCALE 1 : 50 @ A1

SOURCES
SURVEY DRAWINGS BY HAMMOND SHEALLE & CO PTY LTD OCTOBER 1976
FIELD SURVEY BY DICKSON ROTHSCHILD ARCHITECTS
PHOTOGRAMMETRIC INTERPOLA * DICKSON ROTHSCHILD ARCHITECTS

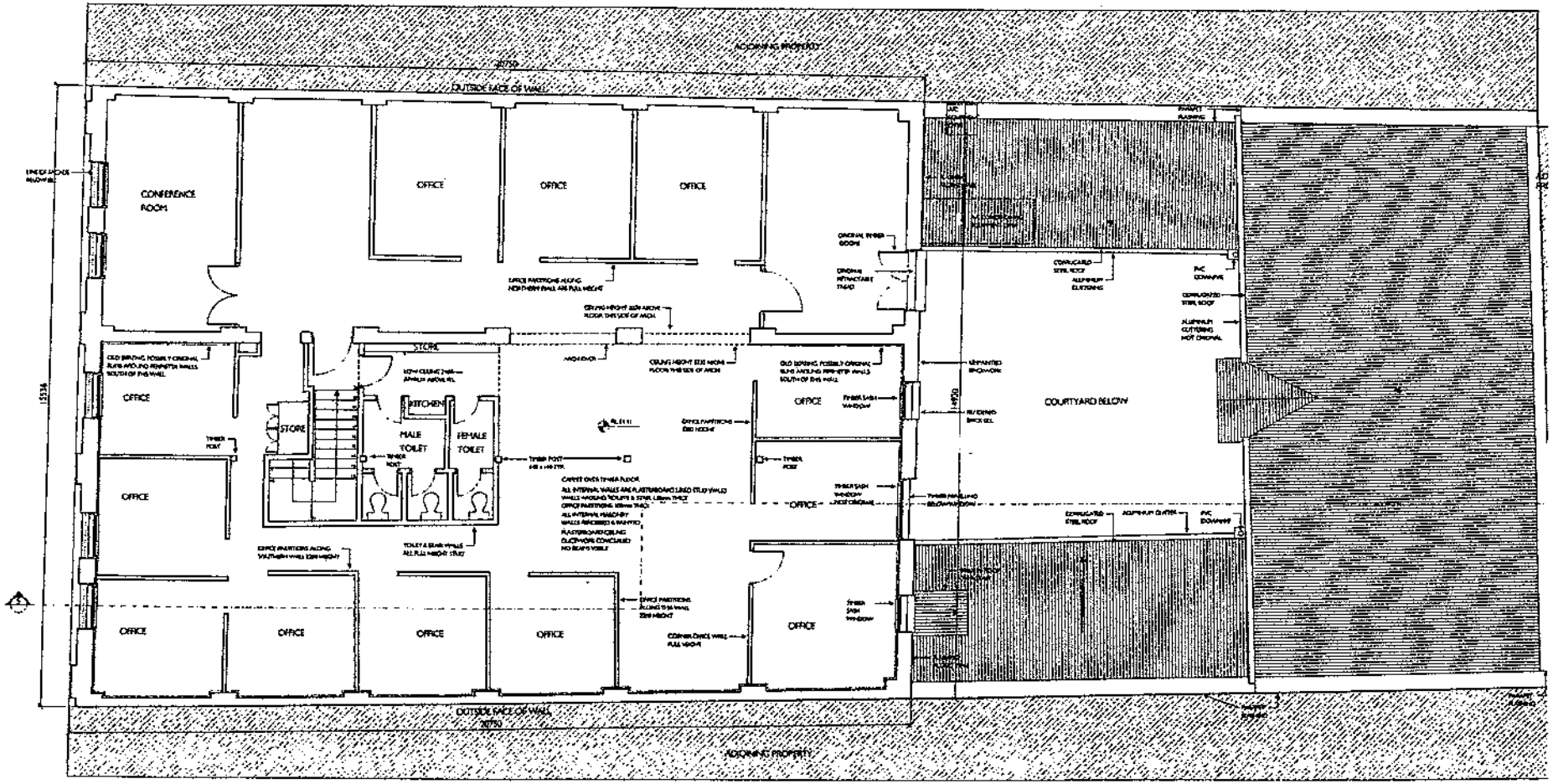
MEASURED DRAWINGS
230-232 SUSSEX STREET, SYDNEY
DICKSON ROTHSCHILD ARCHITECTS
Project No: 97-04603 Dwg. No: 02107 September, 1997



3 FIRST FLOOR PLAN
SCALE 1 : 50 @ A1

SOURCES
SURVEY DRAWINGS BY HANNOND SPEARLE & CO PTY LTD OCTOBER 1991
FIELD SURVEY BY DICKSON ROTHSCHILD ARCHITECTS
PHOTOGRAPHIC INTERPOLATION BY DICKSON ROTHSCHILD ARCHITECTS

MEASURED DRAWINGS
230-232 SUSSEX STREET, SYDNEY
DICKSON ROTHSCHILD ARCHITECTS
Project No: 97-046.03 Dwg No: 03/07 September, 1997



4 SECOND FLOOR PLAN
SCALE 1 : 50 @ A1

SOURCES:
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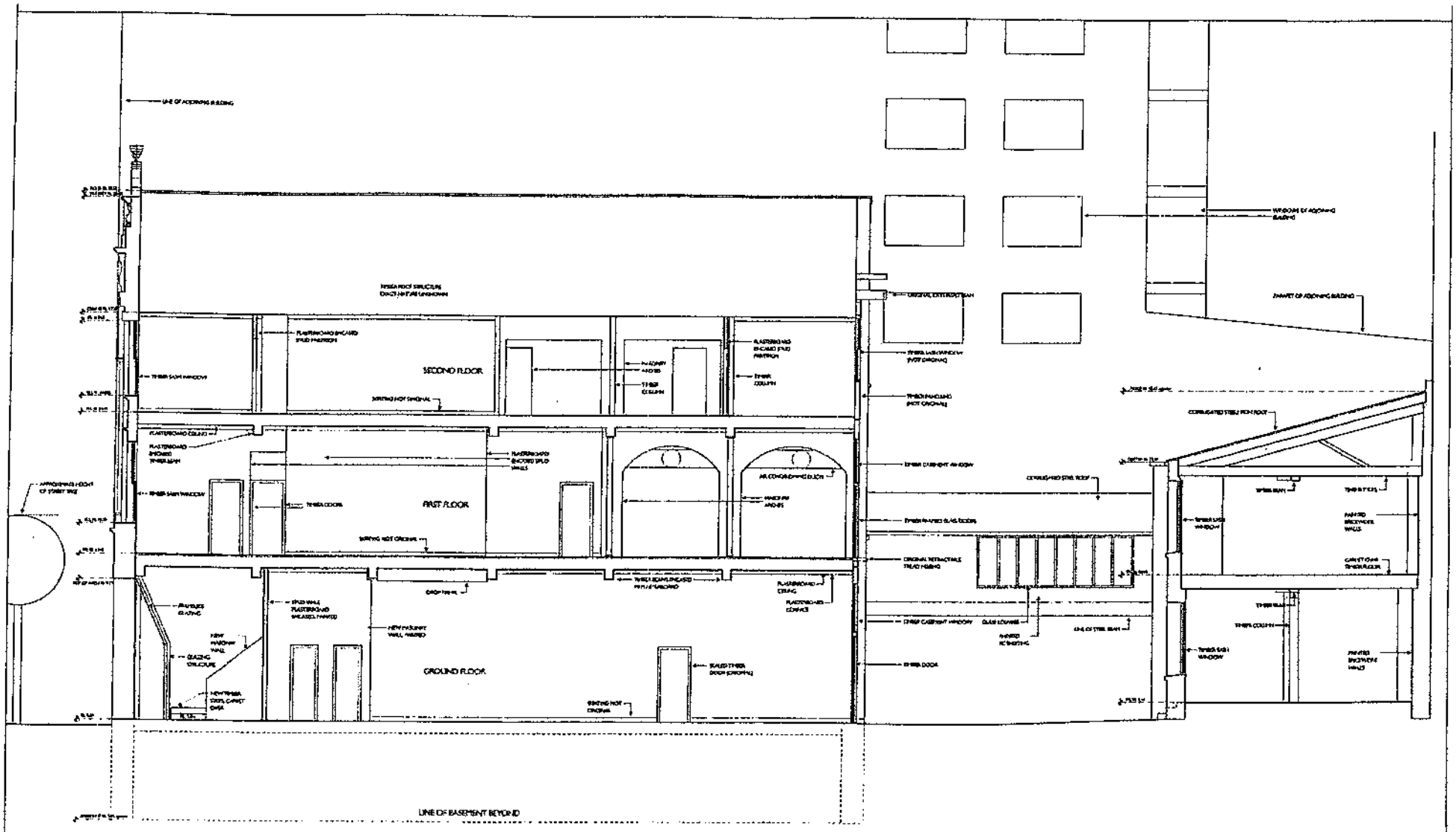
FIELD SURVEY BY DICKSON ROTHSCHILD ARCHITECTS
PHOTOGRAPHIC INTERPOLATION BY DICKSON ROTHSCHILD ARCHITECTS

MEASURED DRAWINGS
230-232 SUSSEX STREET, SYDNEY
DICKSON ROTHSCHILD ARCHITECTS
Project No: 97-046 01 Dwg No: 0407 September, 1997



5 SECTION
SCALE 1 : 50 @ A1

SOURCES
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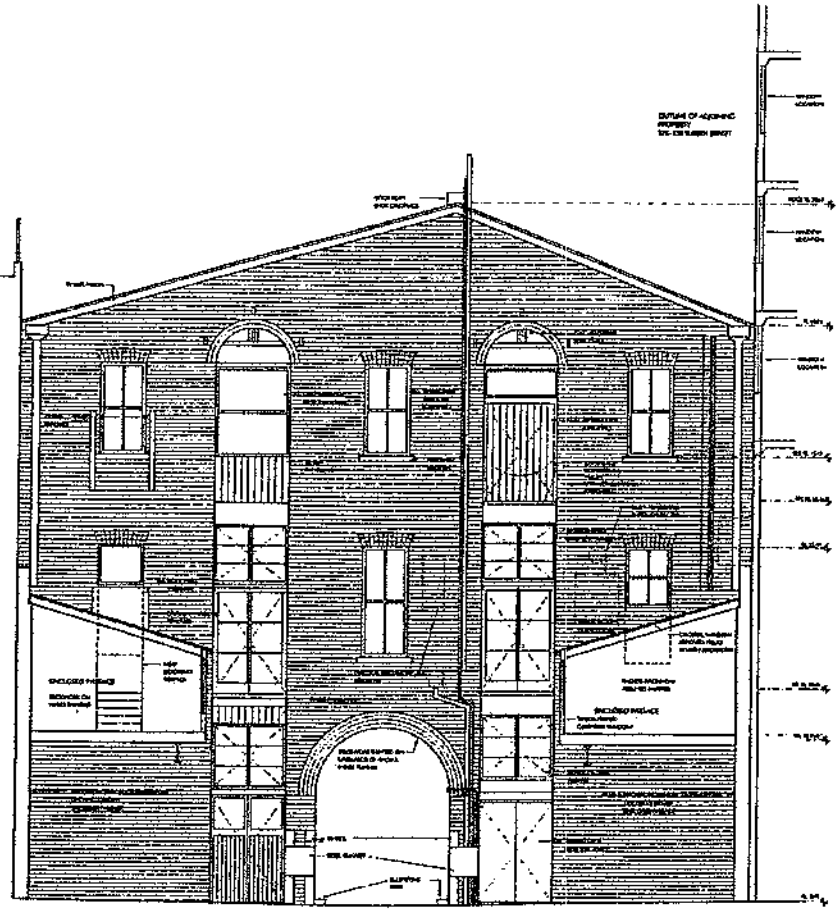
FIELD SURVEY BY DICKSON ROTHSCHILD ARCHITECTS
PHOTOGRAPHIC INTERPOLATION BY DICKSON ROTHSCHILD ARCHITECTS

MEASURED DRAWINGS
230-232 SUSSEX STREET, SYDNEY
DICKSON ROTHSCHILD ARCHITECTS
Project No: 97-046.01 Dwg. No: 05/07 September, 1997

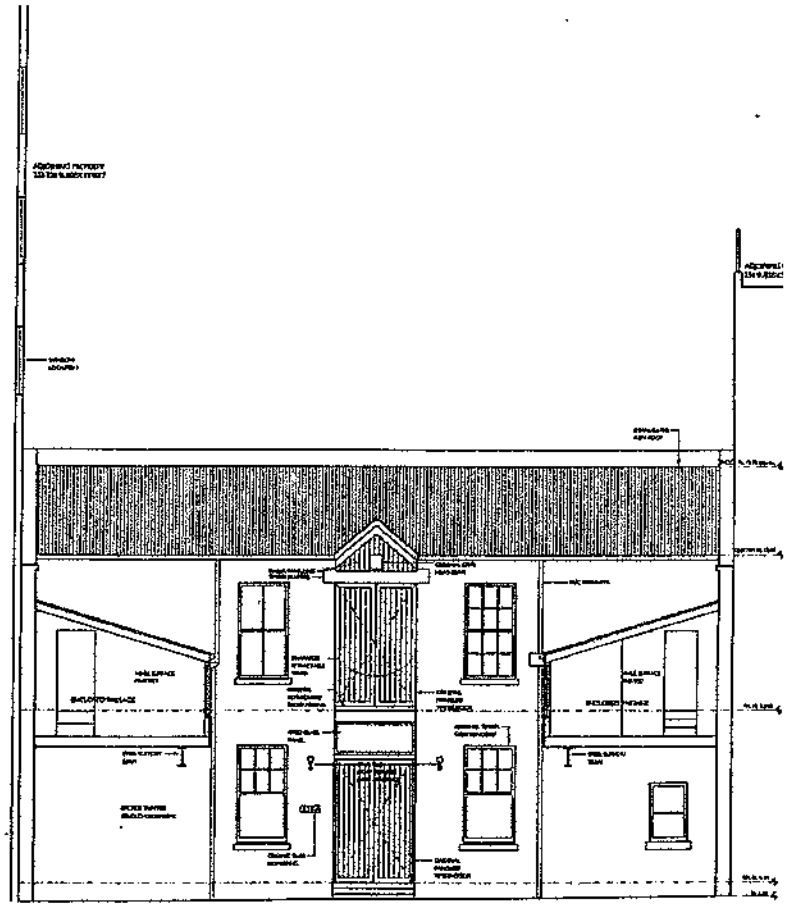
6 SUSSEX STREET FACADE MAIN WAREHOUSE WEST ELEVATION
SCALE 1 : 50 @ A1

SOURCES
SURVEY DRAWINGS BY HAMMOND SPEALLE & CO PTY LTD OCTOBER 1996
FIELD SURVEY BY DICKSON ROTHSCHILD ARCHITECTS
PHOTOGRAPHIC INTERPOLATION BY DICKSON ROTHSCHILD ARCHITECTS

MEASURED DRAWINGS
230-232 SUSSEX STREET, SYDNEY
DICKSON ROTHSCHILD ARCHITECTS
Project No: 97-046.03 Dwg. No: 06/07 September, 1997



7 MAIN WAREHOUSE EAST ELEVATION
SCALE 1 : 50 @ A1



8 REAR WAREHOUSE WEST ELEVATION
SCALE 1 : 50 @ A1

SOURCES

SURVEY DRAWINGS BY HARRICKS SHEARER & CO PTY LTD OCTOBER 1976

FIELD SURVEY BY DICKSON ROTHSCHILD ARCHITECTS

PHOTOGRAPHIC INTERPOLATION BY DICKSON ROTHSCHILD ARCHITECTS

MEASURED DRAWINGS

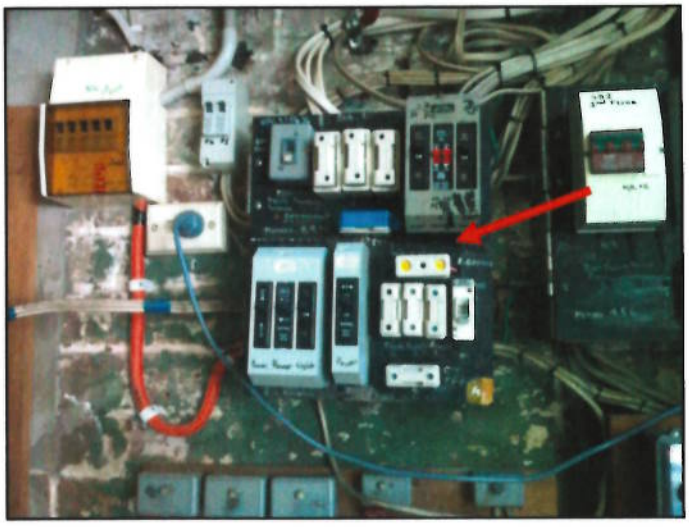
230-232 SUSSEX STREET, SYDNEY

DICKSON ROTHSCHILD ARCHITECTS

Project No: 97-046.03 Dwg. No: 07-07 September, 1997

PHOTOGRAPHS

Photograph 1
Ground Floor, Southern Section, Electrical Distribution Cupboard, Western BEBB (**asbestos containing**).

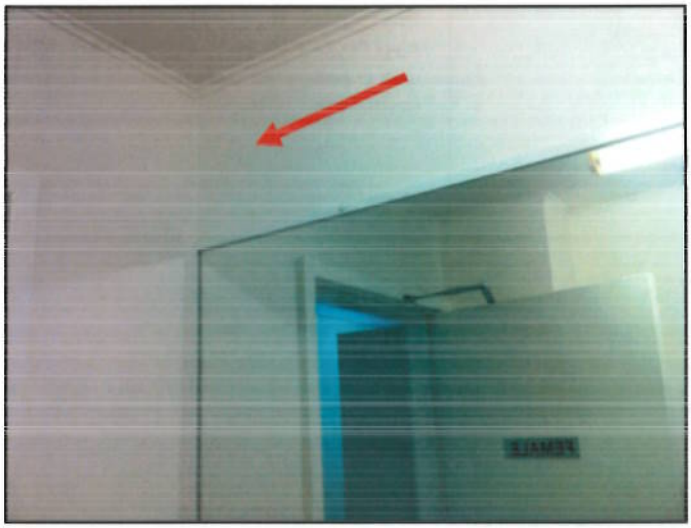


Photograph 2
Ground Floor, Southern Section, Electrical Distribution Cupboard, Eastern BEBB (**asbestos containing**).

Photograph 3
Ground Floor, Northern Section, North Eastern Toilet Airlock Room, FCS wall sheeting (all walls) (**asbestos containing**).

PHOTOGRAPHS

Photograph 4
Ground Floor, Northern Section, North Eastern Toilet, FCS wall sheeting (all walls)
(**asbestos containing**).



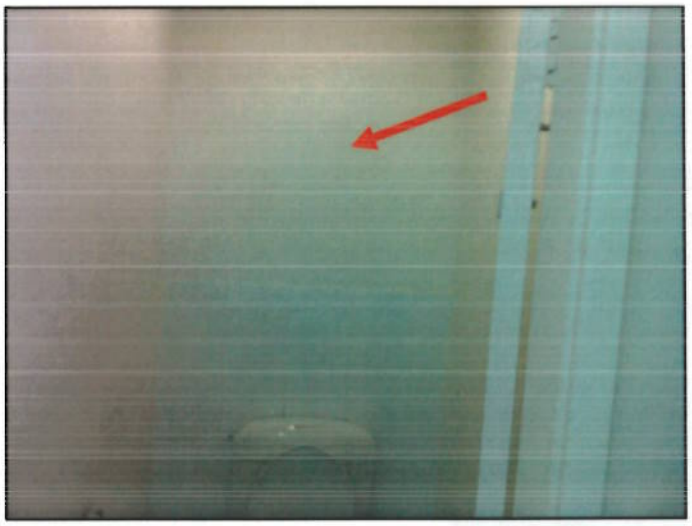
Photograph 5
First Floor, Female Toilet Airlock Room, FCS wall sheeting (all walls)
(**asbestos containing**).

Photograph 6
First Floor, Female Toilet Airlock Room, FCS ceiling sheeting
(**asbestos containing**).

Photograph 7
First Floor, Female Eastern Toilet, FCS wall sheeting (all walls) (**asbestos containing**).

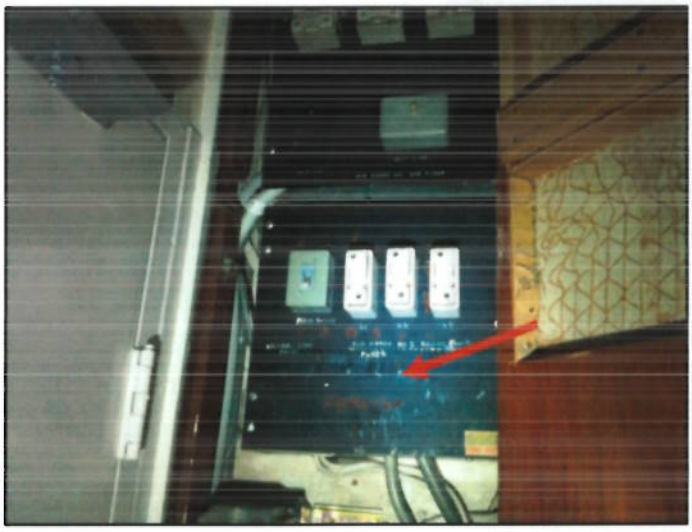
Photograph 8
First Floor, Female Western Toilet, FCS wall sheeting (all walls) (**asbestos containing**).

Photograph 9
First Floor, Male Toilet Airlock Room, FCS wall sheeting (all walls) (**asbestos containing**).

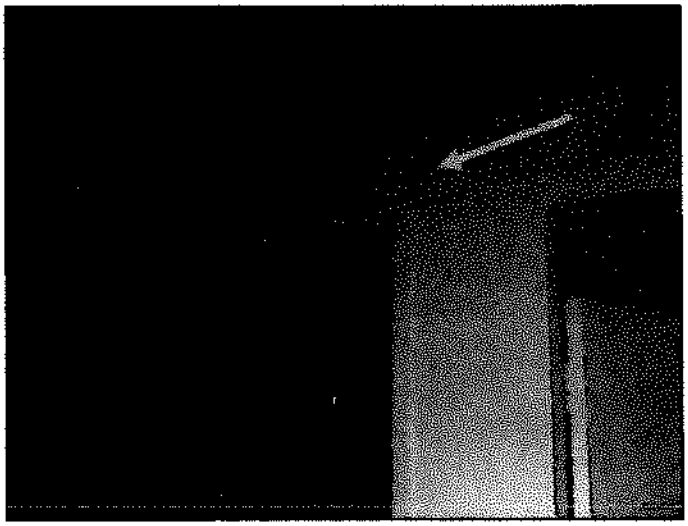


Photograph 10
First Floor, Male Toilet, FCS wall sheeting (all walls)
(**asbestos containing**).

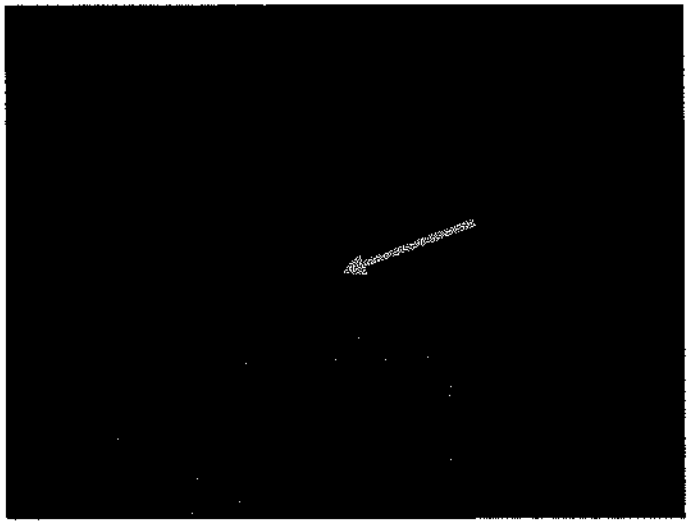
Photograph 11
Second Floor, Western Electrical Distribution Cupboard, upper BEBB
(**asbestos containing**).



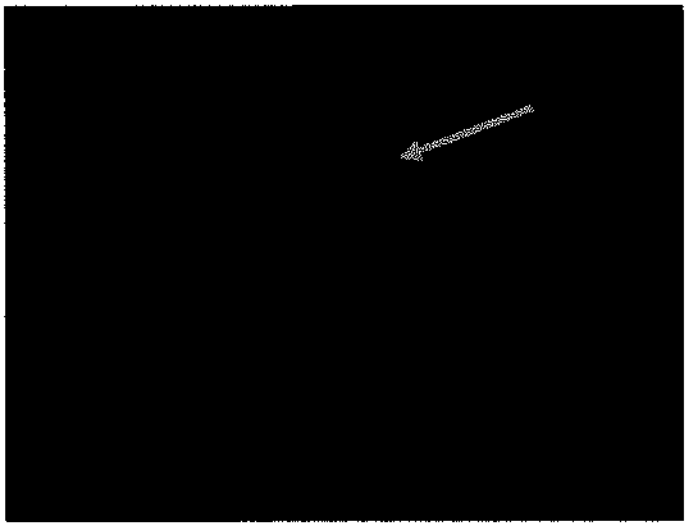
Photograph 12
Second Floor, Western Electrical Distribution Cupboard, lower BEBB
(**asbestos containing**).



Photograph 13
Second Floor, Male Toilet Airlock Room, FCS wall sheeting (all walls) (**asbestos containing**).

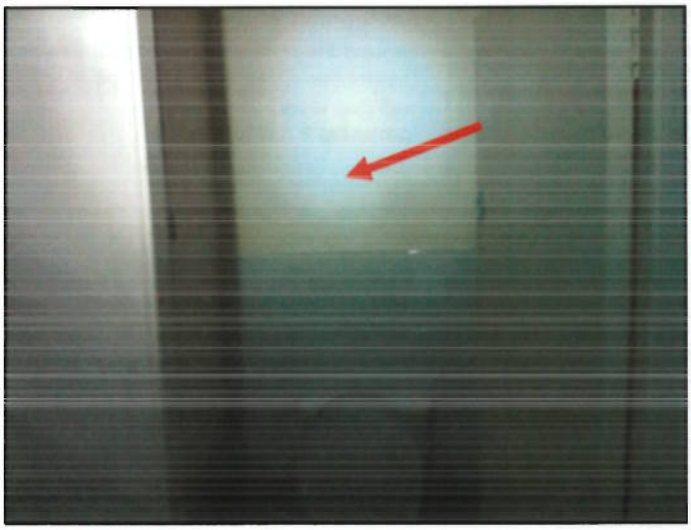


Photograph 14
Second Floor, Male Toilet, FCS wall sheeting (all walls) (**asbestos containing**).



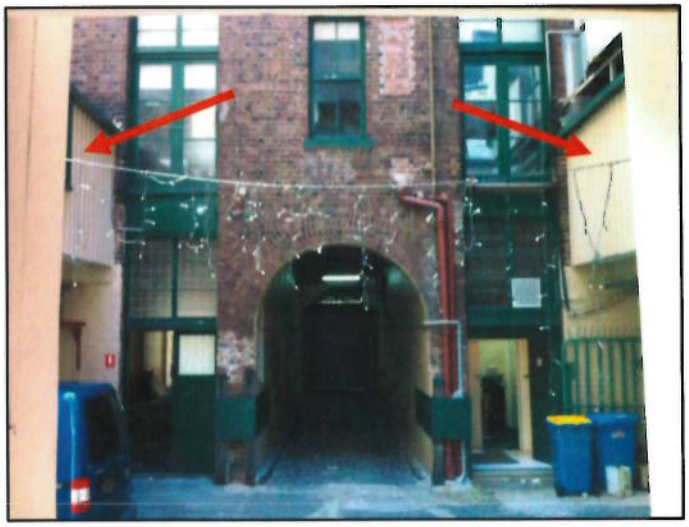
Photograph 15
Second Floor, Male Shower, FCS wall sheeting (all walls) (**asbestos containing**).

Photograph 16
Second Floor, Female Toilet Airlock Room, FCS wall sheeting (all walls) (**asbestos containing**).

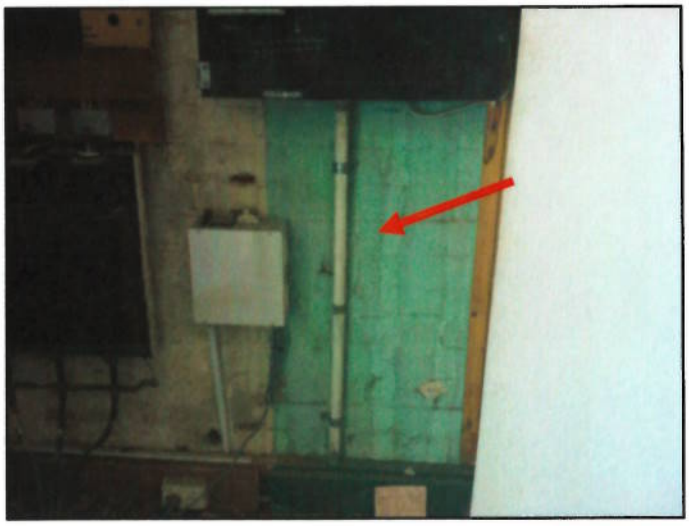


Photograph 17
Second Floor, Female Toilet, FCS wall sheeting (all walls) (**asbestos containing**).

Photograph 18
Ground Floor, FCS ceiling sheeting within ceiling cavity (**asbestos containing**).



Photograph 19
FCS shadow-lining to Northern and Southern external walls of Enclosed Walkways
(**asbestos containing**).



Photograph 20
Ground Floor, Northern Section, Electrical Distribution Cupboard, green paint to brick wall (top layer)
(**contains > 1% Lead**).

Photograph 21
First Floor, Males Toilet Airlock Room. 10cm^2 settled dust sample from ceiling cavity
(**contains 230 mg/m^2 lead**).

Photograph 22
Second Floor, Hallway adjacent Female Toilet. 10cm^2 settled dust sample from ceiling cavity
(**contains 970 mg/m^2 lead**).

ASBESTOS

Asbestos: Description, Properties and Uses

Asbestos is the generic term given to a group of naturally occurring fibrous minerals, based on hydrated silicates, which are found in various rock formations. Differing ratios of oxygen, hydrogen, sodium, iron, magnesium and calcium elements account for several different types of asbestos minerals, the most common varieties being Amosite (brown asbestos), Chrysotile (white asbestos), Crocidolite (blue asbestos). Other types include Anthophyllite, Actinolite and Tremolite.

The immense popularity of asbestos as a building material is attributed to its near unique properties of fire resistance, high abrasion resistance and superb acoustical characteristics coupled with its relatively low cost. Prior to 1973, asbestos was the material of choice for fire proofing, thermal insulation, sound insulation and abrasion resistance. It was used as a spray-on insulation of ceilings and steel girders; as a thermal insulation of boilers, pipes, ducts, air conditioning units, etc; as an abrasion resistant filler in floor tiles, vinyl sheet floor coverings, roofing and siding shingles; as a flexible, though resistant joining compound and filler of textured paints and gaskets; as the bulking material with the best wear characteristics for automobile brake shoes and in countless domestic appliances such as toasters, grills, dishwashers, refrigerators, ovens, clothes dryers, electric blankets, hair dryers, etc.

Asbestos: Health Effects

Many asbestos bearing materials or products are of no significant health risk whatsoever when used in the normal course of events. A health risk exists when asbestos fibres are released into the air and when that air is inhaled into the lungs. Even then, it appears that most people exposed to relatively small amounts of asbestos do not develop any related health problems. There is however no "safe" level of asbestos exposure since the risk is dependent on numerous factors including the time since exposure, exposure duration and concentration, asbestos type, the attributes of the particular individual and environmental factors such as exposure to cigarette smoke and other airborne pollutants.

There are three main diseases associated with airborne asbestos fibres:

Asbestosis - A fibrosis (or scarring) of the lung associated with relatively massive exposure to asbestos.

Lung Cancer - Indistinguishable from that caused by smoking and a common cause of death. The risk of lung cancer is much higher when there is exposure to both cigarette smoking and to airborne asbestos.

Mesothelioma - A cancer of the chest and abdominal lining, it is specific to asbestos exposure.

A feature of these diseases is that symptoms take a long time to appear, generally 5 to 40 years. Once symptoms are evident the disease progresses rapidly.

There is some evidence that Chrysotile asbestos is less carcinogenic than Amosite, and that Amosite is less carcinogenic than Crocidolite in causing mesothelioma, but the evidence is less clear for lung cancer.

Measurement of Airborne Asbestos Fibres

The *Work Health and Safety Regulations 2011* and the Safe Work Australia Asbestos Codes of Practice & Guidance Note set the maximum allowable time weighted average for all forms of asbestos at 0.1 fibre/mL of air.

Air monitoring is used to determine airborne fibre levels. SLR Consulting is NATA certified for Asbestos Fibre Counting and Volume Measurement to carry out such monitoring.

The Safe Work Australia Code of Practice *How to Safely Remove Asbestos 2011* states that air monitoring should be performed whenever Asbestos Containing Materials (ACMs) are being removed, to ensure the control measures are effective.

The onus to provide a safe environment rests with persons in control of a business or undertaking, persons with management or control and persons carrying out demolition or refurbishment work. To meet these obligations it is recommended that SLR Consulting be engaged by the site controller, or their representative, and not an asbestos removal contractor as there could be a conflict of interest in the latter arrangement.

Asbestos Survey

Asbestos surveys are undertaken to identify any asbestos materials/hazards and assess the risk associated with the material/hazard.

Surveys are conducted through visual inspection by experienced personnel. During the inspection material samples are taken as appropriate for analysis.

Limitations

Due to the nature of the task all asbestos surveys are limited. Since asbestos can occur in so many forms and in so many locations, and as there is no instrument to detect asbestos, it is never possible to guarantee all asbestos has been identified. Access is usually restricted, and there may be asbestos hidden behind walls or other structures. Building plans are of great assistance to consultants undertaking surveys.

Asbestos Register

An asbestos register is a record of the location, type and condition of all asbestos containing products identified in a building. Under the Safe Work Australia Codes of Practice and the *legislation*, any place of work constructed after 31 December 2003 must have an Asbestos Register. A SLR Consulting Asbestos Survey Report includes an asbestos register.

Registers must be maintained and changes in the condition or extent of any asbestos present should be recorded. Registers should also detail the next review date, at present annually since the condition of asbestos materials, legislation, guidelines and standards change.

Management Plan

An asbestos management plan is required where asbestos materials have been identified and are to remain on site. The plan would normally be a component in the overall Hazard Management Plan for the site.

Control Options

Asbestos judged to constitute a health risk should be removed, enclosed or encapsulated by an approved asbestos contractor.

Enclosure

This involves the installation of a permanent, solid, non-porous, impervious barrier between the asbestos material and the surrounding environment. Examples include building boxes around steam pipes etc. A suspended ceiling is not permanent and, since occasional access is necessary above a suspended ceiling, enclosure is negated. Furthermore, many suspended ceilings act as return air plenums so enclosure is impossible.

Encapsulation

Encapsulation involves coating the material with a sealant. Good sealants penetrate through the asbestos material to the substrate. The encapsulating substance then hardens and binds all the asbestos fibres into a solid matrix. This is usually a short to medium term management option.

Removal

Removal is not without hazards to the occupants of the building. If not strictly controlled, the removal process can result in increased fibre counts in other areas. Technical competence, experience and integrity are of prime importance in evaluating asbestos removal plans.

We advise clients to work within the usual practised time frames of the experienced asbestos removal companies under strict supervision by a qualified person. Pressing for quicker turnaround times may result in low quality workmanship and unnecessary asbestos risk. Building owners may be in part responsible for risks created by the removal Contractor due to carelessness or negligence.

An independent consultant such as SLR Consulting, experienced in the supervision of asbestos removal, should be retained to act on the client's behalf.

Clearance Inspection

A clearance inspection must be conducted at the completion of asbestos removal works. The clearance inspection may include airborne asbestos monitoring and/or sampling/analysis of materials and should be completed by a suitably qualified and experienced consultant, such as SLR Consulting.

ASBESTOS CEMENT SHEETING

A large number of building products used in the building and construction industry have been made with asbestos and cement. Products include;

- Flat or corrugated, compressed sheeting
- Pipes for water, drainage, flues
- Roof shingles
- Building boards eg. Villaboard, Hardiflex, Wundaboard, Flexiboard
- Cable trays for electrical wiring
- Numerous preformed items such as cisterns, protective housings, etc

Provided these products are maintained in good condition, they present no health risk, however precautions must be observed during demolition, refurbishment etc.

Licensing Requirements

Asbestos-containing products are classified as non-friable or friable. Asbestos cement (AC) is classified as non-friable asbestos however once it is significantly broken, crushed or otherwise damaged WorkCover NSW may consider it to be friable asbestos. The rules governing friable asbestos are far more stringent.

A WorkCover NSW asbestos licence is required to remove 10 square metres or more of non-friable asbestos and there must be WorkCover NSW notification.

Anyone wishing to carry out friable asbestos removal must obtain a friable asbestos removal licence from WorkCover NSW. A friable asbestos removal permit must be obtained for all friable asbestos jobs.

Removal Procedures

The following procedures are recommended for demolition work involving non-friable asbestos cement sheeting in order to reduce the potential health risk to workers and to building occupants.

All asbestos removal and/or decontamination should be undertaken by a competent person working in accordance with the requirements specified in the Safe Work Australia Asbestos Codes of Practice and the *Work Health and Safety Regulations 2011*. A licensed, experienced asbestos removal contractor is required to remove friable asbestos and >10m^2 of non-friable asbestos.

1. Prior to commencement of asbestos removal works, suitable warning signs must be erected. All windows and doors etc in the occupied areas of these buildings should be closed so as to prevent the spread of contamination.
2. All asbestos removal operatives to wear half-face particulate filter (cartridge) respirators and approved disposable coveralls.
3. The bolts fixing the asbestos cement sheets to the main frame must be cut out and removed. Abrasive cutting or sanding discs shall not be used on asbestos cement products. Only approved power tools may be used.
4. The asbestos cement sheets should be wetted or PVA coated (polyvinyl acetate). **High water pressures should not be used**.
5. All asbestos cement sheets should be removed with minimal breakage and be **lowered** to ground level, not dropped.
6. All asbestos cement dust and residues should be cleaned from the work area using an approved vacuum cleaner.
7. All asbestos containing waste must be removed from the site as soon as possible. The bins should be plastic lined, covered and taped secure prior to removal.
8. The asbestos waste shall be disposed of in accordance with the existing regulations.
9. Prior to engagement in the work, all asbestos operatives must be trained in safe working practices. These training aspects include:
    - Health hazards of asbestos
    - Safe working procedures
    - Wearing and maintenance of protective clothing and equipment

LEAD

Lead contamination comes from numerous different sources. Common sources include lead-containing paint, putties, leaded petrol and lead flashing.

Lead is absorbed by ingestion, inhalation and directly through the skin. The finer the particle size the more readily it is absorbed. As a result, some lead compounds are more readily absorbed than others. High lead exposure can cause death, however far lower exposures can also cause a number of adverse consequences, including a reduction in IQ, particularly in children.

Lead containing materials should be managed in accordance with the *Work Health and Safety Regulations 2011*, the *National Standard for the Control of Inorganic Lead at Work* [NOHSC:1012(1994)], the *National Code of Practice for the Control and Safe Use of Inorganic Lead at Work* [NOHSC:2015(1994)] and other relevant standards and guidelines as outlined below.

Acceptable Levels

There are numerous standards but application to particular situations is not always clear.

Paint

In 1969 the National Health and Medical Research Council (NH&MRC) introduced the Uniform Paint Standard which banned the use of white lead for domestic buildings and placed a limit on other forms of lead (usually in the form of dryers) in such paints of 1% (by weight on the dry weight). In March 1992 this limit was lowered to 0.25% and has more recently been reduced even further in domestic paints as outlined in Appendix I (the letter not the number) of *Standard for the Uniform Scheduling of Drugs and Poisons No 20, 2005* published by Australian Therapeutic Goods Administration under the Therapeutic Goods Act 1989. It is therefore common to find up to 1% lead in paint especially in glossy paints. There is no limit on the lead content of old paint finishes.

Moderate lead levels (less than 4%) are generally not considered an immediate health risk if the paint is in good condition and not likely to be damaged or accessible to children who might chew the paint etc. Removal of such paint however poses a health risk if it is not adequately controlled.

Paints of 1% or more lead content are generally considered to be lead containing; however the dry sanding of paints with even 0.25% lead can result in the release of unacceptable levels of lead containing dust.

Australian Standards AS 4361.1-1995 *Guide to lead paint management Part 1: Industrial Applications* and AS 4361.2-1998 *Guide to lead paint management Part 2: Residential and Commercial Buildings* provide guidance for the management of lead paint, information on lead paint testing and selection of an appropriate management strategy.

There is a duty of care to ensure that workers and building occupants are not exposed to excessive lead levels. Young children are particularly at risk.

Dust

Lead in dust is of particular concern because it is easily disturbed and frequently in the form of very fine particles which are more readily absorbed by the human body.

The NH&MRC (National Health & Medical Research Council) has not set guidance concentration levels for lead in dust. Australian Standard AS 4361.2-1998 *Guide to lead paint management Part 2: Residential and Commercial Buildings*, does not offer any general guidance on lead levels in dust but it does provide acceptable surface-dust lead concentrations after lead paint management activities. The acceptance levels for surface dust are:

- Interior floors 1 mg/m^2 (as lead)
- Interior window sills 5 mg/m^2 (as lead)
- Exterior surfaces 8 mg/m^2 (as lead)

The National Environment Protection (Assessment of Site Contamination) Measure (NEPM) 1999 *Guideline on the Investigation Levels for Soil and Groundwater* sets a limit of 300 ppm lead in soils for "standard" residential land-use. This limit is based on both Human Health and Environmental considerations.

Air

The NOHSC (National Occupational Health & Safety Commission) maximum allowable TWA (Time Weighted Average) concentration for airborne lead (inorganic dusts and fumes) is 0.15 mg/m^3, however some lead compounds have lower levels. The ACGIH (American Conference of Governmental Industrial Hygienists have adopted a Threshold Limit Value (Time Weighted Average) of 0.05 mg/m^3 for lead and inorganic lead compounds as lead.

Metallic Lead

Metallic lead or solder containing lead should not be ground, scraped, sanded, melted or otherwise disturbed to produce lead dust or vapours without undertaking appropriate procedures and precautions. Procedures and precautions may include the use of appropriate personal protective equipment (PPE) and control measures to ensure that personnel are not exposed to lead and there is no contamination of surrounding areas.

Control Measures

When high lead levels are encountered control measures should be put in place which are appropriate to the particular situation, in many cases this may consist of a few simple low cost precautions, in some cases removal by experienced contractors working to detailed procedures with air monitoring and independent supervision is required.

The disposal of lead contaminated material should be in accordance with current legislation and guidance.

SLR Consulting can provide expert advice, air monitoring, sampling and project management on lead related issues.

PCBS (POLYCHLORINATED BIPHENYLS)

1 Description, Properties and Uses

PCBs is an abbreviation for Polychlorinated Biphenyls, a group of synthetic chlorinated organic compounds commonly used as non-flammable oils in electrical equipment.

PCBs were commonly used as insulators in electrical capacitors and transformers but were also used in a wide range of other products that took advantage of their stability. Normally the PCBs are held in a metal container carrying no label signifying PCB content.

Small PCB filled capacitors were fitted to electric motors, welders, and fluorescent lights. Typically they are small metal containers holding about 50 millilitres of PCB. Large oil cooled transformers may contain many litres of PCBs.

2 Health Hazard of PCBs

PCBs are suspected human carcinogens and are a serious health problem due to their persistence in the environment, their potential for chronic or delayed toxicity and their accumulation in human and animal tissues. They can enter the body in three ways; by absorption through the skin, by inhalation of the vapour of heated PCBs (not a problem at room temperature), and by swallowing contaminated food or drink. Once PCBs are in the body they tend to lodge in the body fat and stay there for a considerable time.

Exposure to PCBs can cause a range of health problems whose effects increase with the duration of exposure and concentration levels.

PCBs are proven animal carcinogens and suspected human carcinogens. The results of exposure may include liver damage, respiratory disorders, chloracne (a severe skin rash), eczema and skin discolouration. PCBs have also been associated with thyroid gland disorders, muscle and joint pain, headaches, nausea, loss of appetite, abdominal pain, and are potentially related to reproductive problems in humans. Pregnant women should avoid PCB polluted areas.

PCB liquid and vapour is moderately irritating to the eyes.

3 Collection, Transport and Disposal

PCBs must be handled with care. They are very penetrating and will pass through some types of plastic gloves. When collecting PCBs appropriate personal protective equipment (PPE) must be worn.

PCBs are assumed to be present in fluorescent light fittings unless inspection indicates otherwise. Removal requires the following:

- Prior to demolition when the power is disconnected inspect the light fittings.
- Metal PCB containing capacitors are to be removed, placed in plastic lined 200 Litre drums, sealed and disposed of as PCB Scheduled Waste. Any light fittings that show signs of oil staining from capacitors are to be disposed of as PCB contaminated waste.
- Protective clothing including PCB resistant gloves to be worn.
- Contaminated gloves and disposable coveralls to be disposed of as PCB contaminated waste.
- PCBs are covered by a Chemical Control Order under the *Environmentally Hazardous Chemicals Act 1985*. The labelling, storage, transport and disposal of PCBs is highly regulated, and professional advice should be sought on how to deal with these materials.
- Contractors licensed to transport and handle PCBs must be used for transport and disposal.

4 Register and Management Plan

The Environment Protection & Heritage Council's *Polychlorinated Biphenyls Management Plan, Revised Edition April 2003* requires that a risk-based strategy for equipment containing PCBs be adopted. The elements of this strategy are surveying, testing and removal of identified high risk equipment. **There is a timetable by which surveys are to be completed.**

Property owners and managers should have a PCB register. This could form part of their Hazardous Materials Register for the site. Where PCBs are identified a PCB Hazard Management Plan should be in place. This could be a part of the Hazardous Materials Management Plan for the site.