UTS Kuring-gai Campus, Lindfield NSW
Phase 1 Contamination Audit

CRI Australia Pty Ltd

14 September 2007

QM

Issue/revision	Issue 1	Revision 1	Revision 2
Remarks	Initial		Final
Date	12 March 2004	8 August 2007	14 September 2007
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Signature			
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Executive Summary

WSP Environmental Pty Ltd (WSP) (formerly Responsive Environmental Solutions) was commissioned by CRI Australia Pty Ltd to conduct a Phase I contamination audit of the UTS Kuring-gai Campus located on Eton Road, Lindfield NSW, to support a rezoning application to Department of Planning. The initial audit was conducted in 2003-2004, with the current report presenting the findings, updated in context with current Australian environmental guidelines and State legislation.

The objective of the audit was to identify issues, concerns or environmental risks and liabilities associated with the past and present land uses of the site with particular emphasis on the potential for soil and/or groundwater contamination.

The 'site' occupies an area of approximately 20.8 hectares and is divided into two lots: Lot 2 DP1043043 (90% of the total site area) comprising the main campus, sporting fields and associated buildings and Lot 5 DP32292 (remaining 10% of the total site area, the parcel of land located in the north west corner) predominantly used for car parking.

The historical review indicated that the campus was constructed in five stages, with the Stage 1 completed in 1970. Prior to the university landuse the site was natural bushland.

Based on the site walkover in 2003 and the review of available information at the time of the audit, WSP concluded that the environmental issues at the site were as follows:

- The potential presence of asbestos containing building materials in roof tiles and ceiling insulations, and lead flashing on rooftops (Stage 1 buildings);
- Potential migration of any contamination arising from the Film Australia property which is adjoins UTS in the north. Potential sources of organic and inorganic contamination include an underground fuel storage tank located on the site, storage of hazardous chemicals in the waste storage area at the rear of the building and spillage of chemicals from poor house keeping practices observed during the visit; and
- Potential pesticide contamination from onsite spraying of the University sporting fields with pesticides/herbicides.

WSP recommends that during any future demolition works, asbestos containing building materials should be removed and disposed of in accordance with NSW EPA waste classification and disposal guidelines, and WorkCover requirements.

Based on the findings of the preliminary Phase I contamination audit of the UTS Kuring-gai Campus, there is no evidence to suggest that past and present site activities would have grossly contaminated the site and any contamination that may exist is likely to be isolated, and therefore there are no contamination issues identified that would prevent the site being rezoned to residential. WSP, therefore, concludes that the site is likely to be suitable for sensitive landuse (including residential). WSP recommends that a Phase 2 site assessment may be required as part of any future development application approval process targeting the items discussed above.

AUDIT SUMMARY

Type of Audit:	**Phase 1 Contamination Audit**
Client Name:	CRI Australia
Client Contact	Mr Gareth Bird
Property Type:	University of Technology Sydney (UTS), Kuring-gai Campus, Educational Facility
Approximate Site Area:	20.8 hectares
Property Address:	Lot 2 DP1043043 (formerly Lot 1 DP 523446) and Lot5 DP32292 Eton Road, Lindfield NSW
Local Government Area:	Kuring-gai
Property Description:	University Campus, sporting facilities, parking grounds, childcare facility.
Date of Site Visit:	6 November 2003
Weather Conditions:	Fine
Auditors:	Rod Harwood, Rebeka Hall
Documents Reviewed:	No reports made available
Searches:	Title deeds search, geological, groundwater bore data, Kuring-gai Council records
Site Contacts	Mr Steven Wood, Building Services Supervisor Mr Robert Chatterton, Building Services Officer Mr Paddy Parkhill, Caretaker Building Services Various Faculty Heads

1 Introduction

1.1 BACKGROUND

WSP Environmental Pty Ltd (WSP) (formerly Responsive Environmental Solutions) was commissioned by CRI Australia Pty Ltd to update a Phase I Contamination Audit of the UTS Kuring-gai Campus located on Eton Road, Lindfield NSW. The initial audit was conducted in 2003-2004, with the current report presenting the findings, updated in context with current Australian environmental guidelines and State legislation.

The key objective of the audit was to identify issues, concerns or environmental risks and liabilities associated with the current and historical uses of the site that would prevent the site from being rezoned and redeveloped into sensitive landuse (residential), with emphasis on the potential for soil and/or groundwater contamination.

This report details the findings of the Phase I, presenting key environmental issues with a material value of $10,000 or greater and associated recommendations.

1.2 SCOPE OF WORK

The scope of the Phase I included the following:

- A visit and general characterisation of the property, including an inspection of the perimeter of the site;
- A review of available plans, records and related documents;
- A review of historical title deed information;
- A review of Kuring-gai Council development application files related to the site;
- A visual evaluation of surrounding land uses, to identify neighbouring activities which may have affected or present a potential risk to the environmental quality of the property;
- A review of current and historical site activities and available documentation to assess potential for land contamination; and
- The preparation of a report including recommendations and a scope for additional environmental assessment (Phase 2) if necessary.

The scope of work included a site inspection visit and only limited information was obtained from Council regarding the site history and surrounding land uses. The investigation comprised a Phase I assessment only and no intrusive works were conducted as part of the study.

The site inspection was conducted on 6 November 2003 by Mr Rod Harwood and Ms Rebeka Hall from WSP Environmental. Information regarding site activities was mainly provided by representatives from the Building Services Group (part of Facilities Management) and representatives from University departments.

1.3 REPORT STRUCTURE

The remainder of the report is organised as follows:

Section 2 – provides a summary of site characteristics, site history and environmental setting;

Section 3 - presents the key findings of the Phase I audit with particular focus on potential sources of land contamination; and

Section 4 – provides conclusions and recommendations to the audit.

The Appendices that accompany this report comprise report figures; Title Deeds search records and photographs taken during the site inspection.

1.4 LIMITATIONS ON THE USE OF THIS REPORT

The findings of this report are based on the Scope of Work outlined above. WSP performed the services in a manner consistent with the normal level of care and expertise exercised by members of the environmental assessment profession. No warranties express or implied, are made.

Subject to the Scope of Work, WSP's assessment is limited strictly to identifying typical environmental conditions associated with the subject property area and does not include evaluation of any other issues.

The absence of any identified hazardous or toxic materials on the subject property should not be interpreted as a guarantee that such materials do not exist on the site. As this is a Phase 1 audit only, it is not intended to be comprehensive. Additionally, WSP did not conduct soil, gas, groundwater or wastewater analyses or perform contaminant sampling. Nor did WSP investigate any waste materials from the property that may have been disposed of off the site, nor related waste management practices.

The results of this assessment are based upon a site inspection conducted by WSP personnel and information provided by the Client, site occupants and regulatory agencies. All conclusions and recommendations regarding the property area are the professional opinions of the WSP personnel involved with the project, subject to the qualifications made above. While normal assessments of data reliability have been made, WSP assumes no responsibility or liability for errors in any data obtained from regulatory agencies, statements from sources outside of WSP, or developments resulting from situations outside the scope of this project.

WSP is not engaged in environmental assessment and reporting for the purpose of advertising sales promoting, or endorsement of any client interests, including raising investment capital, recommending investment decisions, or other publicity purposes. The client acknowledges that this report is for the exclusive use of the client, its representatives and advisers and any investors, lenders, underwriters and financiers who agreed to execute the reliance letter, and the client agrees that WSP's report or correspondence will not be, except as set forth herein, used or reproduced in full or in part for such promotional purposes, and may not be used or relied upon in any prospectus or offering circular.

2 Site Characteristics

2.1 SITE LOCATION

Details of lot and deposited plans (DP) as well as a site description are presented in Table 2.1. Both Lots are owned by University of Technology (UTS), Sydney. The main access to the University is via Eton Road. The total area of the site is 20.8 hectares.

Table 2.1 Summary of Site Information

Lot/DP	Description
Lot 2 DP1043043 (formerly Lot 1 DP523448)	Comprising the main campus, sporting fields, associated buildings and native bushland
Lot 5 DP32292	car parking

Site location is indicated in Figure 1 and the current site layout and property boundary are shown in Figure 2 with the current layout of campus buildings shown in Figure 3. Report figures are included in Appendix A.

2.2 SITE DESCRIPTION AND CURRENT USE

Campus buildings include a large auditorium, several lecture theatres and practical teaching class rooms and laboratories (for example nursing and science practicals), administrative and faculty offices, cafeteria, library, conference facilities, gymnasium, sporting oval and tennis courts, boat shed, a child care facility as well as other auxiliary buildings including maintenance work shop and car parking areas. Faculties at the Kuring-gai Campus include business, law, sports, leisure and tourism, nursing and education (incorporating science and art).

The majority of Lot 5 DP32292 (carpark) is bitumen sealed. Approximately 30% of Lot 2 DP1043043 is occupied by buildings and sealed ground, with an additional 20% comprising cleared, paved ground used as sporting grounds or carparking. The remainder of Lot 2 comprises bushland.

It was reported by site personnel that approximately 300 fulltime employees work on Campus, with a student capacity of 3,500.

2.3 HISTORICAL SITE ACTIVITIES

Information on historical land uses was obtained from the following sources:

- Discussions with university personnel during the site visit;
- Review of title deed search information;
- Review of historical aerial photographs; and
- Review of Kuring-gai Council files.

2.3.1 Anecdotal Information

WSP personnel conducted a site audit on 6 November 2003 and interviewed several long standing employees, and Faculty representatives. During the Audit the following anecdotal information was obtained:

- Prior to the late 1960s the site was native bushland and was reserved for the William Balmain Teachers college; and
- Construction of the campus commenced in 1969 and was completed over five stages, with Stage 5 completed in 1998.

2.3.2 Title Deed Searches

Title deed information for both Lots (dated November 2003) was obtained and is included in Appendix B. The following is an overview of the results from the title searches:

Lot 2 DP 1043043, currently the campus site:

- From the late 1890's until the mid 1910's, the lot was owned by various persons, including engineers, importers, manufacturers and contractors, with the land most likely remaining as bushland;
- 1915-1994 the site was owned by the Commonwealth of Australia;
- The current owner, the University of Technology, Sydney, has owned the Lot since 1994;
- Since 1995 discrete locations on the site have been leased to various telecommunications; and
- Since 2003, part of the campus building has been subleased to University Co-Operative Bookshop Limited.

Lot 5 DP32292, currently the northern car park:

- Between 1903-1916 owners have included engineers, storekeepers, importers, manufacturers, and contractors;
- Between 1916-1994 the site was owned by the Commonwealth of Australia;
- The current owner, the University of Technology, Sydney, has owned the Lot since 1994.

2.3.3 Aerial Photographs

Aerial photographs for 1930, 1951, 1961, 1970, 1978, 1986, 1994 and 2002 were reviewed in the offices of the Department of Land and Property Information.

- 1930 – The site comprised bushland, with most surrounding streets not sealed and few scattered residential dwellings.
- 1951 – The site remains undeveloped, native bushland with evidence of dirt walking tracks/access roads through bushland. The adjoining Film Australia site has not been cleared or developed. Residential estates in Winchester and Lyle Ave are under construction. Large buildings on Small Street to the north west appear to be factories or warehouses and not residential (which is the current use for these properties). Lady Game Drive appears to be an unsealed road.
- 1961 – new residential dwellings being constructed around the site. The UTS site comprises natural bushland. Film Australia buildings now constructed (comprising three elongated buildings).
- 1970 – Library building and KG02 constructed on the site. No gymnasium building or car parks, however appears to be cleared land. Tennis courts and the sports oval were under construction. New and extended Film Australia buildings.
- 1978 – residential properties continue to be built to the north east, and carparking areas being constructed. No stage 5 buildings (KG05). No other changes in site facilities or on the Film Australia site.
- 1986 – Building KG05 under construction, land cleared and slab laid. Boat shed and child care buildings present. No other changes on site or to the Film Australia site.
- 1994 – childcare facility present, north western residential area not fully established, site facilities same as current, natural bushland appears to be stressed (brown vegetation) indicating a period of drought or bushfire.
- 2002 – extensive natural bushland, no building additions since 1994, and established residential houses north of the site.
- 2007 – no change to the layout , same as in the 2002 aerial photograph.

2.3.4 Council Records

WSP applied to Kuring-gai Council to provide development application records associated with the site. A review of Council files, K392592 to K392594 was conducted on 8 December 2003 and the following information was obtained.

Development application information obtained from Council's files was as follows:

- 1979 – Development consent for 120 car parking space extension to the north western carpark.
- 1983 – Development consent for the construction of a carpark (32 spaces).
- 1984-85 – DA for the construction of Stage 5 comprising staff offices, lecture facilities and additional student amenities in a 4 storey building. Consent was granted on 23 December 1985 by the Director of the Department of Planning & Environment.
- 1990 – Child care facility and access road approval.
- 1993 – Boat shed and access road approval.
- 1993-94 – Additions/alterations to the library.
- 1994 – Access road from Lady Game Drive.
- 1995 – Alterations to campus.
- 1996 – Telecommunications facility.
- 1996 – Extensions to the child care facility.
- 1996 – Subdivision to create two lots.
- 1996 – Telstra mobile phone base.
- 1998-99 – Office fit-out and alterations/refurbishments.

2.4 SURROUNDING LANDUSE

The site is surrounded by natural bushland, residential and commercial properties. Surrounding landuses are:

- North: immediately north of the site is the Film Australia production facility, and beyond low density residential. The Film Australia facility comprises film, video and sound production studios, film and digital editing and other film industry services;
- East: natural bushland and a recreational reserve of the Lane Cove National Park, followed by residential properties;
- South: Fullers Park and natural bushland of the Lane Cove National Park and Blue Gum Creek; and
- West: immediately west the site is adjoined by residential properties (on Lyle Avenue) and natural bushland and a recreational reserve of the Lane Cove National Park then Lady Game Drive. Further west by 200m is the Naamaroo Conference Centre (Uniting Church), camp sites and tourist accommodation, and the National Measurement Laboratory is approximately 600 metres north west of the site.

2.5 SENSITIVE RECEPTORS

The closest sensitive receptors to the site include residential properties located 200m north east of the Campus security gate. Residential properties also adjoin the north western boundary with the car park. The closest sensitive ecosystem is the Lane Cove National Park which surrounds the site to the south, east and west.

2.6 HYDROLOGY

The nearest water bodies to the site are Sugarbag Creek, located 100m east of the site boundary, College Creek located onsite to the south west, and Blue Gum Creek, located 100m south in the Lane Cove National Park. Sugarbag Creek drains to Blue Gum Creek which is a tributary of the Lane Cove River, which is located 200m

southwards, down gradient of the site. The Lane Cove River flows south and joins the Parramatta River at Woolwich and Sydney Harbour. The site is on a sandstone ridge. A review of a 1967 topographical map indicated that the original ground level was 220 feet above Australian Height Datum (AHD) steeply grading down to 50 feet AHD in the south, west and east. Current survey data and topographical contours indicated that the campus development in the late 1960s incorporated the natural land contours with minor cut and filling in the east for the carpark with levelling at the sports oval.

2.7 GEOLOGY AND HYDROGEOLOGY

The geology for the area comprises the Hawkesbury Sandstone formation which includes uniform, fine to medium grained, quartz-rich weathered sandstone with minor siltstone and claystone interbeds. The soils tend to be sandy and slightly acidic.

Information supplied by the Department of Infrastructure, Planning and Natural Resources (DIPNR) on groundwater bore data indicated that there are 5 registered groundwater bores located within 2.5km radius of the site.

The closest bore is located approximately 1.5km south of the site near Bellevue St Chatswood East. It was constructed in 1966, in clay and sandstone with standing water level recorded at 2.4m below ground level. The bore is used for irrigation at the Chatswood Golf Course. There are an additional three bores located at the Chatswood Golf Course for irrigation purposes. The depth of these bores ranged between 8 metres and 40 metres below ground level constructed into water bearing zones in the sandstone.

A fifth well is located 1.6km north of the site, on the west side of Werona Avenue, Killara. The well was constructed in 1966 and is for general use. It was constructed in sand with standing water level reported at 6.8m below ground level.

Groundwater on the site is anticipated at depths greater than 20m below ground level in sandstone with economic supplies (aquifers) at approximately 100m below ground level. The hydrogeological sensitivity classification for the site is considered to be low. Site activities are highly unlikely to impact registered bores located within 2.5km radius of the site.

3 Phase 1 Findings

The following Section presents the key findings from the environmental audit and site visit conducted on 6 November 2003, as well as key findings from the searches conducted on site history and review of information obtained from authorities. The findings are assessed against current environmental guidelines and State legislation.

3.1 EMMISSONS TO ATMOSPHERE

Finding/Issue

There are vents for the cafeteria kitchen, former boiler and the air conditioning system. It was reported that there had been no incineration conducted on the site. No potential sources of air pollution from neighbouring sites were observed.

No issues identified with respect to air emissions.

3.2 WATER SUPPLY

Finding/Issue

Site personnel reported that all water used on the site is obtained from the municipal public mains operated by Sydney Water. Water is primarily used for kitchen use and cleaning, sanitary and drinking purposes. The quantity of consumption of water was not known at the time of the audit.

Site personnel reported that there are no groundwater extraction bores located on the site and none were observed by WSP during the site inspection visit.

No material issues identified with respect to water supply.

3.3 STORMWATER

Finding/Issue

Stormwater sources at the site comprise the following:

- Rainwater collected on-site from within the buildings' footprint areas (on the rooftop);
- Rainwater collected from the remaining areas of the site located outside the buildings' footprints such as sealed car parking areas; and
- Surface run-off received on-site from up-gradient off-site sources.

Site personnel reported that stormwater is uncontrolled in car park areas with flow directed to earth drains followed by final discharge to College, Sugarbag and Blue Gum Creeks.

No material issues identified with respect to stormwater.

3.4 WASTEWATER

Finding/Issue

Wastewater sources at the site comprise the following:

- Sanitary wastewater from the toilets and kitchens within buildings;
- Domestic cleaning of floors and amenities with wastewater discharged to sewer;
- Interceptor pit/grease trap from the cafeteria kitchen. It was reported that the Student Union arranges the pump out of the grease trap every three months. The waste contractor is Clean-away;

- Laboratory chemicals from chemistry and biology practical classes is discharged into the building's sewer system. It was reported that the chemicals used comprises those approved in the 'Chemical Safety in School Chemical Handbook' (CSIS), which are reportedly safe for disposal to sewer;
- Waste photographic processing chemicals from a small photography laboratory is discharged into the building's sewer system; and
- All other liquid wastes generated in the nursing and arts department are discharged to the building's sewer system.

It was reported by site personnel that no wastewater treatment occurs at the site. A review of building plans for the facility indicated that sewer lines are located around the perimeter of building footprints. No other wastewater sources were noted at the site.

No material issues identified with respect to wastewater.

3.5 WASTE MANAGEMENT

Finding/Issue

It was reported that the main types of waste generated at the site comprised general office domestic waste, putrescible waste, cooking oil and grease, cardboard, glass bottles from the cafeteria, disposable nappies from the childcare centre, clinical wastes (such as bandages, swabs etc) used in the teaching laboratories. It was reported that any chemical or clinical waste is disposed to the Gore Hill waste disposal facility.

Other waste products identified were as follows:

- There is one small photography dark room on campus. Chemicals used include film and paper developers and fixers. It was reported that presently there are only 2 litres of each chemical stored within the dark room. There is however approximately 30 litres of old fixer which containers silver stored in the dark room awaiting disposal. Developing chemicals which are mild alkaline solutions are discharged to the sewer drain. It was reported that the dark room is not readily used, and may be used once per annum;
- Waste liquids produced by the ceramics and arts department is disposed down the sink drain and into the sewer system;
- The cleaning contractor, Swans Pty Ltd, disposes of any cleaning product residue via sewer system;
- Disposable nappies from the child care centre are stored in a skip bin and disposed as general waste.

Site personnel could not verify the final waste disposal destinations, and record keeping of waste collection dockets was not made available during the audit for verification.

No material issues identified with respect to waste management.

3.6 CHEMICAL STORAGE AND HANDLING

3.6.1 Bulk Storage

Finding/Issue

Site personnel reported there are no underground or aboveground storage tanks present at the site other than a grease trap associated with the cafeteria kitchen. It was reported that the grease trap is emptied every three months by the appointed contractor, Clean-away.

A redundant above ground diesel oil tank was observed in the roof of the library. It was reported that the tank was installed in 1971 to power the diesel powered boiler for water heating. The tank capacity is 500 litres and was contained within a bund. The fill point of the tank could not be determined nor where pipe work from the tank went. There was no evidence of leakage or surface staining around the tank or within the bunded wall. The tank is no longer in use and the boiler is now gas operated.

No other above or underground tanks were observed during the site inspection by WSP personnel.

No material issues identified with respect to bulk storage tanks.

3.6.2 Other Chemical Storage & Usage

Finding/Issue

During the Audit the main chemicals stored on-site were typically associated with cleaning and garden maintenance, as well as chemicals used by the nursing, science, photographic and art departments.

1. Cleaning Chemicals

Cleaning of site facilities is contracted to Swan Pty Ltd. Cleaning chemicals are stored onsite in a designated, fenced, underground storeroom. The volume of cleaning products was observed to be less than 100 litres of Spitfire cleaning products comprising heavy-duty disinfectants, degreasers, bleaches, deodorises and window cleaner. These chemicals were appropriately kept in the designated storage room.

2. Hazardous Store and Woodworking Workshop

A hazardous materials store is located in the maintenance shed located north west of KG02. The materials store is the responsibility of the Building Services Branch which stores chemicals associated with garden maintenance. Additionally, Building Services has a woodworking workshop used to repair furniture and small scale joinery. The following chemicals were observed within the hazardous materials store and workshop:

- Hydraulic oil – 20 litres
- Outboard 2 stroke oil – 20 litres
- Diesel – 200 litres
- Round-up herbicide – 40 litres
- Various lubricants and 4 stroke oils in small volumes – 40 litres
- Various paint tins and spray cans – 10x10 litre tins
- Methylated spirits, mineral turps, kerosene, varnishes – 300 litres

All chemicals were appropriately stored with the exception of secondary containment around the 200 litre diesel drum. Surface corrosion was observed in the hazardous materials store however isolated to an area of 0.5m^2 of concrete.

The Building Services Branch indicated that Campus equipment and vehicles (for example tractor, landscaping machines, mowers and utility vehicles) are serviced and maintained offsite or serviced by a mobile subcontractor who is responsible for disposing of used materials (such as waste oil and parts).

3. Nursing Department

Chemicals used by the nursing department for practical training comprised saline solutions and antiseptics. During the audit small volumes (<20 litres per practical laboratory), are stored in designated and labelled shelves.

4. Science Department

Chemicals used by the science department for chemistry and biology practical classes include a variety of inorganic and organic compounds, alcohols and oxidising agents. During the audit the chemistry storeroom was inspected and chemicals that are potentially contaminating which were stored (in small volumes) in the preparation room included the following:

- Chromium oxides, sulphides and acetates;
- Copper chloride, acetated and sulphates;
- Oxidising agents including cobalt and copper nitrates;
- Static chloride;
- Sodium dichromate;
- Vanadium pent oxide;
- Zinc chloride;
- Silver acetate;

- Nickel carbonates and chlorides;
- Lead carbonate, chloride and dioxide forms;
- Ethylene glycol, EDTA;
- Benzene;
- MEK;
- Formic acid etc.

Although the above chemicals were present on site, it was observed that volumes of such hazardous compounds were kept in small volumes (typically <500ml) and appropriately segregated, labelled and stored. It was reported that chemicals used in the laboratories by the Science Department are those permitted in the Chemical Handbook for Chemical Safety in Schools (CSIS) and material safety data sheets for chemicals used and stored within the preparation room are documented.

5. Photography, Art and Ceramics

Chemicals used and stored onsite by the photography, art and ceramic teaching rooms included the following:

- Photography dark room - film and paper developers (alkaline) and fixers produced by Kodak (approximately 40 litres). Approximately 30 litres of used fixer (which contains silver) was also observed inside the dark room;
- Ceramics Pottery workshop – approximately 100 containers of <1 litre Walker and Cesco powdered glazes and colouring compounds (containing chrome, cobalt, copper, iron, manganese and nickel) stored inside two lockable cabinets;
- Art studio and store room – silk screen stripper (20 litres), methylated spirits (20l), mineral turps (20 litres), and various paints, varnishes and stains (combined volume <50 litres).

6. Pest Control

It was reported by site personnel responsible for controlling pests that a pesticide gel is applied in and around buildings. Gel application has been used for the past eight years, with pesticide spraying occurring in the past.

Regular maintenance on the Sports Oval is undertaken internally however, annual weed control is contracted to Sydney Weed & Pest Management. Chemicals used for weed control included “Spearhead" brand with the following active constituents:

- 20g/l Clopyralid
- 15g/l Diflufenican
- 300g/l MCPA

The application rate is 5.0litres/ha. The total area treated is approximately 1.8 hectares. Fertilising of Campus grounds is conducted annually by the Building Services Group which use "Dynamic Lifter" at the rate of 650kgs per Hectare on the sports ground. It was reported that no pesticides are currently used on the sports ground. There was no information made available of historical fertiliser/herbicide/pesticide application rates.

Site personnel reported that there had never been any incidents or accidents involving chemicals at the site.

No material issues identified with respect to stored chemicals.

3.7 ENVIRONMENTAL NOISE

Finding/Issue

No significant on-site noise sources were noted by WSP personnel during the site visit. Site personnel reported that the university social areas operate within the stated hours of operation in accordance with their licence.

There were no sources of noise from surrounding properties observed during the audit.

No material issues identified with respect to environmental noise.

3.8 LEGIONELLA

Finding/Issue

It was reported that the air-conditioning system for the university is air cooled and that there are no evaporative cooling towers. The University has 3 York Air Cooled Chillers. Reportedly there are no cooling towers and no evaporative coolers. Accordingly, no Legionella testing is undertaken.

The hot and cooling water systems are chemically treated to prevent corrosion and build up of scale in the heat exchangers and pipe work. This is undertaken biannually.

No material issues identified with respect to Legionella.

3.9 OTHER ENVIRONMENTAL ISSUES

3.9.1 Polychlorinated Biphenyls (PCBs)

Finding/Issue

Oils containing PCBs were used in electrical and hydraulic equipment in Australia until the 1970s and are being phased out. These oils, which were used as insulating fluids, can still be found in old electrical equipment such as transformers, capacitors, hydraulic equipment and fluorescent light fittings.

WSP observed an electricity substation located adjacent to northern end of building KG02. The electrical substation was housed within a double brick structure on a concrete slab. It was reported that the substation is owned and operated by the local electricity authority and there was no access to the substation during the site visit. There was no evidence to suggest that there had been oil leaking from the substation.

It was reported by site personnel that all lighting had been upgraded and the presence of PCB containing electrical equipment is unlikely. The Audio Visual Department indicated that any radioactive and PCB containing equipment and power packs had been removed from the site (approximately five years ago) and the equipment is stored at the UTS Broadway campus.

No material issues identified with respect to PCBs.

3.9.2 Ozone Depleting Substances (ODS)

Finding/Issue

Site personnel reported that refrigeration systems are CFC free. Small air conditioning systems through out the campus are R-22, which replaces ODS CFC-22 refrigerant. It was reported that all Halon fire extinguishers have been changed and maintenance of fire fighting equipment is subcontracted. Fire Extinguishers are maintained by Extinguisher Services. This is undertaken 6 monthly.

At the time of the audit the fire maintenance contractor was Wormalds. The frequency of testing depends on the type of system. Fire detection, emergency warning, gas flood, fire doors and sprinkler systems are tested monthly. Other systems such as hydrants, hose reels and smoke exhausts are tested 3 monthly.

No material issues identified with respect to ODS.

3.9.3 Asbestos Containing Materials (ACM)

Finding/Issue

It was reported by site personnel that no asbestos testing has been conducted at the site. Building services have indicated that there has been asbestos removal works conducted, with the majority of ACM removed from rooftops of campus buildings. However at the time of the site inspection, there were known sources of asbestos containing building materials remaining and included:

- Lagging around pipe work in men's toilets;

- Fibrous roof tiles on a section of KG02 which had not yet been replaced;
- Ceiling tiles in the main building and common areas (such as corridors and walk ways);
- Fibrous sheeting in roofing of the carpark; and
- Asbestos lagging inside the chemistry laboratory cabinets.

A material issue identified with respect to asbestos-containing materials includes the removal and disposal of ACM associated with the refurbishment/ demolition of any buildings during site redevelopment.

3.9.4 Radioactive Substances

Finding/Issue

It was reported by the Engineering Department that the satellites used are non ionising radiation, which means that communication is conducted via radio frequencies. The Science Department reported that there are no radioactive sources other than small volumes of gamma-ray sources, which are lead enclosed and kept in a restricted area of the Science office.

No material issues were identified with respect to radioactive substance.

3.10 SOIL AND GROUNDWATER CONTAMINATION

3.10.1 Current and Historical On-Site Sources

Finding/Issue

Prior to the University being constructed the land was natural bushland. Based on this knowledge, there are unlikely to be any historical on-site sources of contamination

Current potential sources of contamination associated with University activities are as follows:

- Chemical usage and disposal by the nursing department;
- Contamination arising from science laboratories and associated chemical use, storage and disposal;
- Chemicals and materials used and disposed by the art, ceramic and photographic department;
- Storage of pesticide, herbicide, oils and fuels and the hazardous materials store associated with building maintenance services;
- Contamination arising from cafeteria grease traps;
- Presence of an above ground diesel tank formerly used to power a boiler;
- Spraying of pesticides or herbicides across the oval and other sporting fields.

On closer inspection of the above and the assessment of chemical storage procedures, types and volumes used, it was concluded that the above sources have a low potential to cause land contamination.

No material issues were identified with respect to potential sources of contamination associated with current and historical onsite landuses, with the exception of chemical application for treating pests and weeds in the sporting fields.

3.10.2 Potential Offsite Sources

Surrounding landuses predominantly comprise residential dwellings and the Lane Cove National Park, with the exception of the Film Australia facility which is located adjacent at the northern boundary. The Film Australia site was identified as a potential offsite source of contamination for the following reasons:

- Presence of an underground fuel tank, reportedly unleaded petrol, in the north west corner of the property's parking area. A vent line was noted during the inspection. A dispenser pump was not observed and therefore it is unknown whether it is operational;
- Storage of 5 x 200 litre drums, approximately 20 x 25 litre chemical containers of unknown contents at the rear of the site. There was a Hazchem code (2WE) and oxidising agents, toxic and corrosive substances signage in the holding area. There was evidence of surface staining, drums and containers were poorly labelled and inappropriately stored and unbunded; and
- General house keeping was observed to be poor at the rear of the site.

Material issues identified include the potential for soil and groundwater contamination arising from the Film Australia site in particular chemical spillage from waste drum storage at the rear of the facility and potential leakage of hydrocarbons from an underground storage tank located in the north western section of the site.

To assess with greater certainty the presence of hydrocarbon contamination attributable to activities conducted on the adjoining commercial/industrial site, a Phase 2 intrusive soil and groundwater investigation would be required. The assessment would need to be conducted in accordance with NSW EPA environmental guidelines, Contaminated Land Management Act (CLM Act (1997)) and SEPP 55 Remediation of Land. Assessment of laboratory data should be against the NEPM (1999) and NSW EPA (1994) criteria for soil quality, and the ANZECC (2000) guideline for groundwater protection.

Any contamination arising from offsite uses can be remediated to levels suitable for sensitive landuse redevelopment. Remediation and validation works would need to be conducted in accordance with NSW EPA guidelines and to fulfil planning provisions in SEPP 55, as well as to comply with obligations in the CLM Act (1997). Given the site geology, it is anticipated that contamination from Film Australia would only have impacted the soil and unlikely to have impacted groundwater.

4 Conclusions and Recommendations

Based on the preliminary environmental audit conducted by WSP the following environmental issues, in order of priority, were identified:

- Potential contamination migrating onto the site from the adjoining Film Australia facility;
- Potential chemical residue in shallow soils in the sporting fields from application of herbicides and pesticides;
- Asbestos roofing, lagging and building materials as well as lead flashing from the roof; and
- Chemical storage including in the hazardous materials store and the storage of old or unused chemicals (low risk).

WSP concludes that based on the findings of the Phase I contamination audit there is no evidence to suggest that past and present site activities would have grossly contaminated the site and any contamination that may exist is likely to be isolated. This would need to be confirmed with targeted sampling at the above identified locations.

WSP makes the following recommendations as part of a Phase 2 site assessment for development application approval:

- A hazardous material audit (with sampling and identification of asbestos and PCB) should be completed to fine tune the extent and integrity of the hazardous building materials which exist on the site;
- Any demolition/removal of PCB and asbestos containing materials should be conducted in accordance with current NSW EPA waste classification and disposal guidelines, and WorkCover occupation health & safety procedures; and
- A limited and targeted Phase 2 intrusive contamination assessment at the northern property boundary to assess whether any contamination, from potential sources identified on the Film Australia site, has migrated onto the UTS property. This would involve the drilling and collection of soil samples, as well as the installation of groundwater wells. The contaminants of concern that should be tested include heavy metals, volatile and semi-volatile organic compounds. In addition, limited surface soil sampling should be conducted across the sports oval and any other sporting fields which may have been treated with organochlorine/organophosphate pesticides. By conducting an intrusive study, the risks can be effectively quantified.
- The results of Phase 2 soil and groundwater investigation should be assessed against the relevant landuse criteria stated by NSW EPA, NEPM and ANZECC guidelines. If concentrations of contaminants exceed the relevant landuse guideline a remedial action plan should be developed, with remediation and validation works completed in accordance with NSW EPA guidelines, CLM Act (1997) and SEPP55.

Appendix A Report Figures

Appendix B Title Deeds Searches

Appendix C Audit Photographs