APPENDIX J

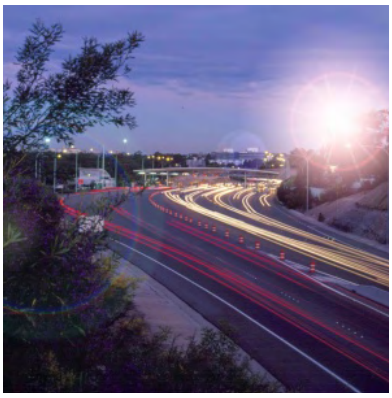
Building Assessment Report

AECOM

Prepared for:

Energy2U Alliance

c/- AECOM Australia Pty Ltd
Level 11, 44 Market Street, Sydney NSW 2000


Building Assessment Report

North Sydney Zone Substation
70 Berry Street, North Sydney NSW

AECOM

25 November 2009

Document No.: S4139701_Building_Assessment_RPT_25Nov2009.doc

Environment

AECOM

Distribution

Building Assessment Report
North Sydney Zone Substation 70 Berry Street, North Sydney NSW

25 November 2009

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Executive Summary

AECOM Australia Pty Ltd (trading as AECOM, hereafter referred to as AECOM) was engaged by the Energy2U Alliance (Energy2U) to conduct a Building Assessment Report for the EnergyAustralia's North Sydney Zone Substation located at 70 Berry Street, North Sydney, NSW (the Site).

The objective of the Building Assessment Report is to assess the potential hazards associated with the decommissioning and demolition of the EnergyAustralia Zone Substation located on the Site.

Based on the scope of work provided to AECOM in the project brief (received 18 August 2009) it is understood that the proposed scope of work comprises two tasks which include:

- preparation of a Stage 1 Environmental Site Assessment (ESA), and
- preparation of a hazardous materials survey report.

Issues with respect to hazardous materials located on site such as asbestos, lead based paints and PCBs contained within electrical fittings are addressed in the accompanying AECOM Hazardous Materials Survey Report.

The report findings indicate that the Site was most likely used for commercial and/or industrial purposes between 1933 and 1964. Since 1964 the site has been owned by the Sydney County Council, which has now become EnergyAustralia. Based on the review of historical aerial photographs and other historical information reviewed, the site has operated as an electricity substation from 1964 onward.

A search of the NSW EPA contaminated lands list indicated the Site was within the vicinity of a listed former gasworks; however, the former gasworks site is hydraulically down gradient from the Site and is considered unlikely to have contributed any historical impact.

The site investigation identified oil spillages which potentially contain PCBs in the areas surrounding and beneath the transformers. These spills may pose a risk to soil and groundwater quality, in both on-site, and off-site environments. PCB contamination from the Site may pose a further potential risk to stormwater quality by migration through run-off to off-site environments.

It is possible that more extensive contamination from historical seepage of transformer oils containing PCBs may exist in collection pits below the transformers. This potential risk should be considered in the event that any excavations of these areas are undertaken.

The current risk to on-site workers from the possible PCB contamination is considered low as the source is largely confined to pits below the transformers.

1.0 Introduction

1.1 Background

AECOM Australia Pty Ltd (trading as AECOM, hereafter referred to as AECOM) was engaged by the Energy2U Alliance (Energy2U) to conduct a Building Assessment Report for EnergyAustralia's North Sydney Zone Substation located at 70 Berry Street, North Sydney, NSW (the Site).

1.2 Objectives

The objective of the Building Assessment Report is to assess the potential hazards associated with the decommissioning and demolition of the zone substation located on the Site.

1.3 Scope of Work

Based on the scope of work provided to AECOM in the project brief (received 18 August 2009) it is understood that the proposed scope of work comprises two tasks which include:

- preparation of a Stage 1 Environmental Site Assessment (ESA) as detailed in the Task 1 description (**Section 1.3.1)**, and
- Preparation of a hazardous materials survey report as detailed in the Task 2 description (**Section 1.3.2)**.

The hazardous materials survey is to be provided as a separate report.

1.3.1 Task 1 – Stage 1 Environmental Site Assessment (ESA)

The objective of the Stage 1 ESA will be to gain an understanding of the historical and current land use of the Site and the location(s) and nature of potential areas of environmental concern (AEC).

The Stage 1 ESA will include:

1. Review of the following data:
    a. Historical Certificates of Title for Lots 6, 6A, 7, 7A and 8 on Plan Number 24474.
    b. Section 149 Certificates.
    c. WorkCover Dangerous Goods Records.
    d. Published soil geology and hydrogeology data.
    e. Historical aerial photographs.
    f. Information readily available on the Department of Lands and other websites.
    g. Any background information readily available from EnergyAustralia, such as heritage, contamination and/or geotechnical reports.
    h. Council archival records.
2. Site inspection, including interviews with site personnel (as applicable/available), in order to gain an understanding of current and historical Site operations, infrastructure and locations of potential contamination sources.
3. Preparation of a report that:
    a. provides a summary of the current land use and existing hazardous equipment,
    b. identifies any potential areas of environmental concern, and

c. provides a preliminary assessment of the contamination status of the Site.

AECOM notes that this investigation has been undertaken in accordance with the NSW EPA Guidelines for Consultants Reporting on Contaminated Sites (NSW EPA, 1997) and with reference to the seven step Data Quality Objective (DQO) process endorsed in the DECC (2006) Guidelines.

1.3.2 Task 2 – Hazardous Materials Survey Report

For the purpose of the proposed hazardous materials survey, which is a prerequisite to demolition, and which is intended to meet obligations under the NSW Occupational Health and Safety Regulation 2001, hazardous materials are classified as construction materials and components containing asbestos, synthetic mineral fibre (SMF), polychlorinated biphenyls (PCB) and lead based paint/lead containing dust.

The deliverable will comprise a site inspection and provision of an asbestos and hazardous construction materials survey report for the nominated property.

The scope of work covered by the survey will comprise the activities discussed below:

1. Review of any existing building plans.
2. Inspection of the entire property for hazardous construction materials. The scope of the assessment will include a visual examination of the construction materials of the buildings within the property.
3. AECOM will undertake the inspection by “non-destructive” means unless requested otherwise. We will require complete access during this time.
4. Sampling of any materials suspected of containing asbestos. Samples of suspected asbestos material will be forwarded to a National Association Testing Authorities (NATA) accredited laboratory for analysis and issue of NATA endorsed reports.
5. Testing of painted surfaces for lead using lead check swabs which provides an indication of whether the paint contains lead.
6. Collect samples of typical settled dust to be analysed for lead content. The samples will be analysed by a NATA accredited laboratory, with the result to be expressed in mg/kg.
7. Prepare a report detailing the location, extent, condition and type of asbestos, SMF, PCB and lead materials detected. The areas not accessible due to access restrictions will be identified. The report will include photographs detailing the location and extent of the hazardous materials present to comply with the requirements of legislation.
8. An asbestos materials register will be generated and included in the survey report. The register will contain the location, condition and risks associated with any asbestos material detected during the survey and recommendations for any clean-up or removal works found to be required.
9. Inaccessible areas will be listed in the report, and comments will be included in the likelihood of these areas containing hazardous materials. Recommendations will be made for further action required for these areas.
10. Provision of one hard copy of the report.

The hazardous materials survey report will be provided as a separate document to this report.

Work will be undertaken in accordance with the NSW Occupational Health and Safety Act, 2000 and the NSW Occupational Health and Safety Regulation, 2001.

2.0 Site Description

2.1 Site Details

The following table summarises the relevant details that describe the Site:

Table 1 Site Details

Item	Details
Site Name	North Sydney Zone Substation
Site Address	70 Berry Street, North Sydney NSW 2055
Locality Map	Refer to **Figure F1**.
Site Area	930 m^2 (approximate)
Current Site Owner (s)	EnergyAustralia
Current Certificate of Title	Lots 6, 6A, 7, 7A & 8, DP24474
Municipality	North Sydney
Current Zoning	Special Use Zone

2.2 Present Land Use

The Site is currently utilised as an operating electricity substation. According to the the Section 149 certificate the Site is zoned Special Use Zone. The North Sydney Local Environment Plan (LEP) (North Sydney Council, 2001) states that the primary objectives of the zone that encompasses the Site are to identify land on which special land uses are carried out and minimise the impact of the use of that land on adjoining land.

2.3 Surrounding Land Uses

The current surrounding land uses within the vicinity of the site are described in **Table 2.**

Table 2 Surrounding Land Use

Direction	Land use
North	Low to medium density residential.
South	Berry Street and high density commercial/residential (Berry Square).
East	High density commercial and Walker Street.
West	High density commercial (formerly Dick Smith Electronics) and Ward Street.

2.4 Surface Waters

The nearest surface water bodies to the Site are Lavender Bay located approximately 700 m south of the Site and Berrys Bay located approximately 800 m south west of the Site. Lavender and Berrys Bay open into Sydney Harbour.

2.5 Geology

According to the Geological Series Sheet of Sydney (1:100,000), regional geological conditions in the vicinity of the Site are characterised by medium to coarse grained quartz sandstone with very minor shale and laminite lenses and underlain by Hawkesbury Sandstone of the Wianamatta Group (NSW DMR, 1983).

Soils derived from Hawkesbury Sandstone are generally sandy, shallow and highly permeable (SCS NSW 1989). Highly permeable soils encourage the migration of contaminants.

A review of information on the Acid Sulphate Soils Risk Map for North Sydney in the Local Environment Plan (North Sydney Council, 2001) indicated that the Site is not located in an area characterised by Acid Sulphate Soils.

2.6 Hydrogeology

Groundwater occurrence in the claystone, siltstone, laminite and clays underlying the site is expected to be limited in extent and highly saline (Pells, 1985). If groundwater occurs in the sandstone, it is expected to occur from 2 m to 12 m depth (Pells, 1985). Groundwater in the sandstone is generally of reasonable quality (200 – 2,000 mg/L total salts), whilst groundwater in the claystone, siltstone and laminite is expected to be of higher salinity (Pells, 1985).

A registered groundwater bore search was performed using the NSW Department of Natural Resources groundwater bore database (www.nratlas.nsw.gov.au). The Groundwater Database search found that there were 11 registered groundwater bores identified within a 1 km radius of the Site. Groundwater Bore information is summarised in the table below.

Table 3: Groundwater Bore Search Information (1 km radius)

Bore ID	Depth of Bore (m)	Standing Water Level (m)	Distance from Site	Purpose	Lithology
GW105413	3.50	1.39	400 m south east	Monitoring Bore	0.0-0.1 meters below ground surface (m bgs) – ASPHALT 0.1-1.0 m bgs – FILL 1.0-3.0 m bgs – SAND with shell fragments 3.0-3.5 m bgs – SAND
GW105414	3.50	1.37	400 m south east	Monitoring Bore	0.00-0.15 m bgs – ASPHALT 0.15-0.50 m bgs – FILL 0.5-3.0 m bgs – SAND with shell fragments 3.0-3.5 – SAND with shell fragments

Bore ID	Depth of Bore (m)	Standing Water Level (m)	Distance from Site	Purpose	Lithology
GW105415	3.50	1.40	400 m south east	Monitoring Bore	0.00-0.15 m bgs – ASPHALT 0.15-0.50 m bgs – FILL 0.5-3.0 m bgs – SAND with shell fragments 3.0-3.5 m bgs – SAND
GW105416	3.50	1.46	400 m south east	Monitoring Bore	0.00-0.15 m bgs – ASPHALT 0.15-1.50 m bgs – FILL 1.5-2.2 m bgs – SAND with shell fragments 2.2-3.0 m bgs – CLAY, black with high plasticity 3.0-3.5 m bgs – SAND black with high plasticity and shell fragments
GW107764	-	-	250 m south west	Monitoring Bore	-
GW109600	6.50	2.30	600 m east south east	Monitoring Bore	0.0-0.2 m bgs – CONCRETE 0.2-0.5 m bgs – Gravelly Sand FILL 0.5-2.5 m bgs – Clayey Sand FILL 2.5-6.5 m bgs – SANDSTONE BEDROCK
GW109601	2.00	0.40	600 m east south east	Monitoring Bore	0.0-0.1 m bgs - ASPHALT 0.1-1.2 m bgs – Gravelly Sand FILL 1.2-2.0 m bgs – Clayey Sand FILL with gravel 2.0-2.2 m bgs – CLAY 2.2-4.0 m bgs – Weathered SANDSTONE

Bore ID	Depth of Bore (m)	Standing Water Level (m)	Distance from Site	Purpose	Lithology
GW109602	8.30	4.50	600 m east south east	Monitoring Bore	0.0-0.1 m bgs – ASPHALT 0.1-0.5 m bgs – Clayey Sand FILL 0.5-1.1 – CLAYEY SAND with SANDSTONE 1.1-8.4 m bgs – SANDSTONE
GW109603	5.00	2.50	600 m east south east	Monitoring Bore	0.0-0.1 m bgs – CONCRETE 0.1-1.0 m bgs – Sand FILL with gravel 1.0-4.0 m bgs – Clayey Sand FILL with gravel 4.0-5.0 m bgs – SANDSTONE
GW109604	1.70	0.70	600 m east south east	Monitoring Bore	0.0-0.1 m bgs – ASPHALT 0.1-0.6 m bgs – Sand FILL, black 0.6-1.2 m bgs – CLAYEY SAND, black 1.2-1.7 m bgs – SANDSTONE BEDROCK
GW109605	4.00	2.20	600 m east south east	Monitoring Bore	0.0-0.1 m bgs – CONCRETE 0.1-1.2 m bgs – Gravelly Sand FILL 1.2-2.0 m bgs – Clayey Sand FILL with gravel 2.0-2.2 m bgs – Clay 2.2-4.0 m bgs – Weathered SANDSTONE

Groundwater database search results are provided within **Appendix A**.

Based on local topography, local geology and surface drainage, shallow groundwater is expected to be within the shallow subsurface fill materials and likely to flow to the south towards Lavender Bay.

2.7 Topography

The Site topography is generally sloping to the south and is situated on Hawkesbury Sandstone surrounding Lavender Bay. The Site has an approximate surface elevation of 75 m AHD. The local topography generally slopes south towards Lavender Bay.

3.0 Site History Review

3.1 Aerial Photographs

Historical aerial photographs were accessed from the NSW Department of Lands. Observations of the Site and surrounding land are summarised in **Table 4.**

Copies of the relevant historical aerial photographs are provided as **Appendix B**

Table 4 Historical aerial photograph review

Photograph Details	Description
6 March 1930 Runs 1-12 Black and White	**Site**: The quality of the image is poor and therefore the constituents of the Site cannot be determined. **Surrounding:** The Site is surrounded by low to medium density residential to the north. There appear to be commercial premises along Berry Street to the south, east and west of the Site. To the immediate west of the Site Ward Street is visible and to the further north Harriet Street is visible. There appear to be residential properties beyond Berry Street to the south, east and west of the Site.
May 1951 Run 11 Black and White	**Site:** The Site appears to be developed. The Site appears to contain one medium sized building on the Berry Street frontage. The quality of the aerial photograph was poor and it was not possible to distinguish any other features of the Site. **Surrounding:** The Site surrounds are the same as the 1930 aerial photograph (see above).
1961 Run 32E Black and White	**Site:** There is a medium sized building fronting onto Berry Street. The northern portion of the Site appears to be covered with concrete. **Surrounding:** The Site surrounds are the same as the 1951 aerial photograph. To the south of the Site more commercial/industrial properties have been developed.
28 April 1972 Run 6 Black and White	**Site:** There is a rectangular building along Ward Street and a concrete yard east of this building with rectangular objects contained within the concrete yard. **Surrounding**: To the north of the Site medium density residential buildings and Harriet Street are observed. To the west of the Site, Ward Street and commercial/industrial high density complexes are observed under construction. To the south of the Site Berry Street and high density commercial/residential complexes are observed as under construction. To the east of the Site medium to high density residential properties are observed.
30 October 1980 Run 4 Black and White	**Site**: The Site appears the same as the 1972 aerial photograph. **Surrounding**: The Site surrounds appear the same as the 1972 aerial photograph. To the west, south west and south of the Site the construction of high density commercial/residential properties have been completed.

Photograph Details	Description
31 December 1999 Run 2 Colour	**Site**: There is a rectangular building along the western boundary of the Site along Ward Street. A concrete yard is visible to the east of this building. Two rectangular objects are visible inside the concrete yard. Part of the eastern boundary of the Site is covered by the high-rise building to the east of the Site. **Surrounding**: The Site surrounds appear the same as the 1980 aerial photograph.
3 October 2004 Run 4 Colour	**Site**: The Site appears the same as 1999 aerial photograph. The Site is overshadowed by the high density building on the eastern boundary of the Site and therefore the image quality is poor. **Surrounding**: The Site surrounds appear the same as the 1999 aerial photograph.

In summary, the historical aerial photograph review indicated that the Site was first developed as an electricity substation between 1961 and 1972. Prior to the development of the electricity substation, the Site was likely used for commercial/industrial purposes.

3.2 Dangerous Goods Search

A search of the Stored Chemical Information Database (SCID) maintained by WorkCover NSW was not requested by AECOM as permission from the Site owner was not received prior to the production of this report.

3.3 Local Council Information

Planning Certificates for the site were reviewed by AECOM. These certificates were obtained from North Sydney Council and were issued under Section 149 of the *Environmental Planning and Assessment Act 1979*,. A summary of the review is provided in following:

- The Site is zoned Special Uses.
- The Site is not identified as being within a “Conservation Area”, under Part 4 – Heritage Provisions of *North Sydney Local Environmental Plan 2001*.
- The Site is not identified as containing a “Heritage Item” under *Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005*.
- The Site is not identified as containing a “Heritage Item” under Part 4 – Heritage Provisions of *North Sydney Local Environmental Plan 2001*.
- The Site is not identified as a “Contributory Item”, under Part 4 – Heritage Provisions of *North Sydney Local Environmental Plan 2001*.
- The Site is not identified as an “Uncharacteristic Element”, under Part 4 – Heritage Provisions of *North Sydney Local Environmental Plan 2001*.
- The Site is not affected by Section 38 or 39 or the *Coastal Protection Act 1979*.
- The Site is not proclaimed as a Mine Subsidence District within the meaning of Section 15 of *Mine Subsidence Compensation Act 1961*.
- The Site is not affected by any road widening or road realignment under the *Roads Act 1933* or under any environmental planning instrument.

- The Site is not affected by any road widening or road reservation under any Council resolution.
- The Site is not identified as “Bushfire Prone Land” on Council’s Bushfire Prone Land Map as certified by the NSW Rural Fire Service Commissioner dated 8 April 2009 pursuant to the requirements under the *Rural Fires Act 1997* and *Environmental Planning and Assessment Act 1979*.
- The Site is not subject to any reservation for acquisition by a public authority for any purpose under any environmental planning instrument applying to the land as set out in this certificate.
- The Site is not affected by a policy, adopted by the Council or adopted by any other public authority and notified to the Council for the express purpose of its adoption by that authority being referred to in planning certificates issued by the Council, that restricts the development of the land by reason of the likelihood of landslip, bushfire, flooding, tidal inundation, subsidence, acid sulphate soils or any other risk except contamination.
- The Site is not affected by the *Heritage Act 1977*.
- The Site is not listed in the Register of the National Trust of NSW.
- The Site is affected by a Tree Preservation Order which applies throughout the North Sydney Council area.
- Council records indicate the Site may have been used in the past for a potentially contaminating activity; however, the Council is not aware of any such activities being undertaken at the Site.
- Council is not aware of the Site (or part of the Site) being declared “Significantly Contaminated” land, as defined under Section 11 of the *Contaminated Land Management Act, 1997*.
- Council is not aware of the Site (or part of the Site) being subject to a “Management Order” land, as defined under Section 14(1) of the *Contaminated Land Management Act, 1997*.
- Council is not aware of the Site (or part of the Site) being subject of an approved “Voluntary Management Proposal” land, as defined under Section 17(1) of the *Contaminated Land Management Act, 1997*.
- Council is not aware of the Site (or part of the Site) being subject to an “Ongoing Maintenance Order” land, as defined under Section 28(2) of the *Contaminated Land Management Act, 1997*.
- Council is not aware of the Site (or part of the Site) being the subject of a “Site Audit Statement” land, as defined under Part 4 of the *Contaminated Land Management Act, 1997*.

A copy of the certificates are included in **Appendix C** of this report.

3.4 Historical Certificate of Titles

A review of historical Certificates of Title through the Land Titles Office was undertaken to provide details of historical ownership and possible former uses of the Site.

The Site is currently owned by EnergyAustralia and is currently operating as an electricity zone substation at 70 Berry Street, North Sydney NSW.

Copies of the Certificate of Titles are presented in **Appendix D** and are summarised in the table below:

Date	Registered Proprietors
Lots 6, 6A, 7, 7A, 8 DP24474 – A/C 10211-57	
2005 – To date	EnergyAustralia
1995 – 2005	Sydney County Council
Lots 6, 6A, 7, 7A, 8 DP24474 – CTVol 10211 Fol 57	
1966 – 1995	Sydney County Council
Lots 6 & 7 DP24474 – Area 1 Perches – CTVol 6799 Fol 90	
1964 – 1966	Sydney County Council
1954 – 1964	Ernest Francis Copes, industrial draughtsman
Lot 13 of McMillans subdivision od Part Allotment 4 Section 5 Town of North Sydney – Area 2 ¼ Perches – CTVol 712 Fol 198	
1954 – 1954	Colin Kenneth Balmer, clerk John Arnold Conolly, clerk
1950 – 1954	Colin Kenneth Balmer, clerk John Arnold Conolly, clerk Lucy Pearl Robinson, wife of resident secretary
1938 – 1950	Kenneth Stephen Balmer, company secretary Lucy Pearl Robinson, wife of resident secretary
Lot 13 of McMillans subdivision od Part Allotment 4 Section 5 Town of North Sydney – Area 2 ¼ Perches – CTVol 712 Fol 198	
1933 – 1938	Cecil William Moore, ironmonger Roy Walter Moore, ironmonger
1894 – 1933	James Binning Moore, property owner
1884 – 1894	Mary Ann Scott, married woman
1884 – 1884	William McMillian, innkeeper

In summary, the historical titles obtained indicate that the Site was predominantly used for commercial purposes, consisting of workshops and offices and more recently an electricity substation.

The site was first owned by Sydney County Council in 1964, which is now known EnergyAustralia. Sydney County Council became Sydney Electricity in 1990 (refer to the Sydney Electricity Bill of 1990: http://www.austlii.edu.au/au/legis/nsw/bill_en/seb1990235/seb1990235.html) . In 1996, Sydney Electricity merged to become EnergyAustralia, the current owner of the site.

3.5 Zoning and Planning Information

The North Sydney Local Environment Plan (LEP) (North Sydney Council, 2001) indicates that the Site is zoned Special Uses Zone. According to the LEP the specific objectives of the special use zone include the following:

- Ensure that buildings within the zone are similar in type, height, bulk and scale to surrounding buildings; and
- Minimise the adverse effects of development on surrounding residential development.

3.6 Contaminated Lands Database Review

A search of the NSW EPA contaminated lands database (http://www.environment.nsw.gov.au/clmapp) on 5 November 2009 indicated that the Site was within the vicinity of one site listed on the contaminated lands database located within 1 km of the Site. The site details are the following:

- HMAS Platypus (Former Gasworks) – High Street, North Sydney located approximately 700 m south south east of the Site.

A copy of the search results for North Sydney Council Local Government Area are provided in **Appendix F**.

3.7 Previous Environmental Reports

No previous environmental reports were provided by the Energy2U Alliance for the Site, nor were any Site personnel aware of any previous reports.

3.8 Site History Summary

Based on the above information, the Site was likely used for commercial/industrial purposes since 1933. Since 1964 the Site has been owned by Sydney County Council and subsequently, EnergyAustralia. The Site has a historical and current use as an electricity zone substation.

No WorkCover Dangerous Goods records were able to be obtained for this Site (refer to **Section 3.2**).

4.0 Site Inspection and Observations

A Site inspection was completed by AECOM personnel Rohan James (Project OHS Technician) and Steve Masters (Professional Scientist) on 29 October 2009 under the supervision of an EnergyAustralia representative.

The site inspection was performed in general accordance with protocols and procedures documented in the AECOM Occupational Health and Safety Management System and ISO9001 accredited Quality Management System. A Health and Safety Management Plan was prepared for the site inspection. The purpose of the plan was to establish personal protection standards and mandatory safe working practices to minimise health and safety risks to employees, sub-contractors and the general public during field activities. All AECOM personnel had completed, 24 hours HAZWOPPER training, Green card training for Construction Site Safety purposes and Level 2 First Aid.

The following table contains observations and information gathered during the site inspection. Site photographs are provided within the **Plates** section.

Item	Observation
Site Features	At the time of the Site inspection the following features were observed and noted: • one entry and exit point on Berry Street (**Plate P 1**) • site buildings along the western boundary including control rooms, switching rooms, cabling rooms, storage rooms and a lunch room and toilet facilities • one transformer (Tx5) in the north west corner • four transformers (Tx1 to Tx4) along the eastern boundary,and • one central access road.
Site equipment	Significant site equipment observed during the site inspection included: • five transformers located on the north-western and eastern sides of the Site: - Tx1: South-eastern corner - Tx2: Eastern boundary - Tx3: Eastern boundary - Tx4: North-eastern corner - Tx5: North-western corner • banks of back-up batteries in the first floor control room, • switching equipment in the control rooms, and • high voltage cabling in the cable rooms (**Plate P 2**).
Site surface	Within the yard, the Site was predominantly covered with concrete. Transformers were located along the Site boundaries, beneath which were gravel pits (**Plate P 3** and **Plate P 4**).

Item	Observation
Site Topography and Drainage	The Site generally slopes towards the south with drainage towards Lavender Bay approximately 700 m to the south of the Site. A stormwater drain runs down the access road draining towards Berry Street.
Visible, surface staining or stressed vegetation	No vegetation was present on the Site. Oily surface staining was visible beneath the five transformers, both within the gravel pits and to a limited extent on the surrounding concrete. No volatile hydrocarbon emissions were detected using a handheld photo ionisation detector (PID). The staining presumably results from the leakage of transformer oils which have historically contained PCBs. Minor tar staining was observed in the cabling room adjacent to the cable joint boxes. Three 5 L drums of jointing compound in the ground floor storage room identified the tar as Emoleum EM2H Joint Box Compound. No volatile hydrocarbon emissions were detected using a handheld PID.
Site Photographs	Site photographs are presented in **Plates** section of this report.

5.0 Conclusions

The Building Assessment Report undertaken by AECOM provides the following Site specific findings:

- The Site was most likely used for commercial and/or industrial purposes between 1933 and 1964. Since 1964 the site has been owned by Sydney County Council, which has now become EnergyAustralia. Based on the review of historical aerial photographs and other historical information reviewed, the site has most likely operated as an electricity substation from 1964 onward.
- Eleven off-site groundwater monitoring wells within a 1 km radius of the Site were identified. Based on local topography, local geology and surface drainage, shallow groundwater is expected to be within the shallow subsurface fill materials and likely to flow to the south towards Lavender Bay.
- A search of the NSW EPA contaminated lands list indicated the Site was within the vicinity of a listed former gasworks, however, the former gasworks site is hydraulically down gradient from the Site and is considered unlikely to have contributed any historical impact.
- The underlying geology is characterised by medium to coarse grained quartz sandstone with minor shale and laminite lenses and underlain by Hawkesbury Sandstone of the Wianamatta Group (NSW DMR, 1983). Soils derived from Hawkesbury Sandstone are generally sandy, shallow and highly permeable (SCS NSW 1989). Highly permeable soils may encourage the migration of potential contaminants.
- Oil spillages which potentially contain PCBs were identified in the areas surrounding and beneath the transformers. These spills may pose a risk to soil and groundwater quality, in both on-site, and off-site environments.
- It is possible that more extensive contamination from historical seepage of transformer oils containing PCBs may exist in collection pits below the transformers. This potential risk should be considered in the event that any excavations of these areas are undertaken.
- PCB contamination from the Site may pose a further potential risk to stormwater quality by migration through run-off to off-site environments.
- The current risk to on-site workers from the possible PCB contamination is considered low as the source is largely confined to pits below the transformers.

Issues with respect to hazardous materials located on site such as asbestos, lead based paints and PCBs contained within electrical fittings are addressed in the accompanying AECOM Hazardous Materials Survey Report.

6.0 References

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Figures

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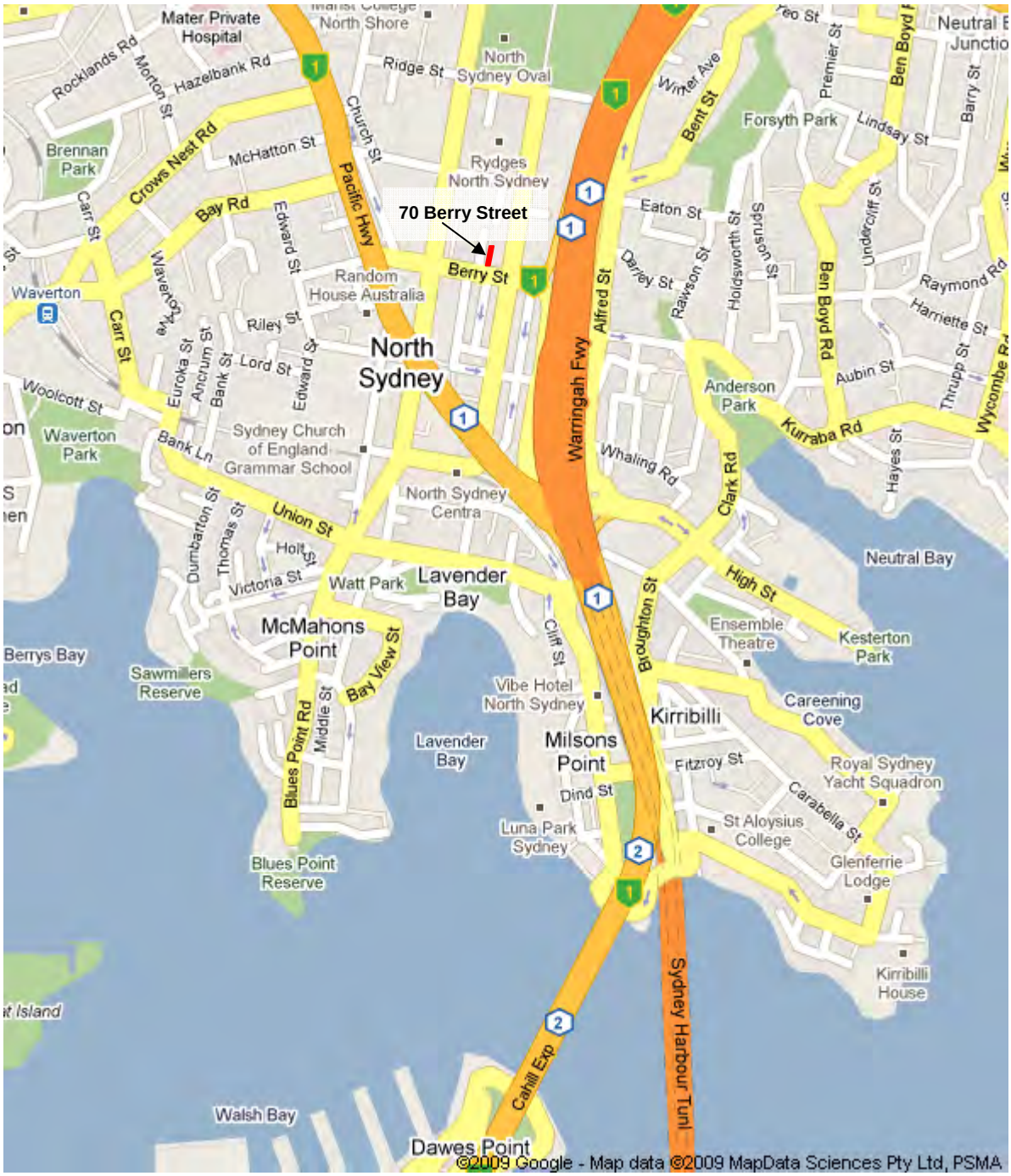
Figure F1: Site Location Plan



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Plates

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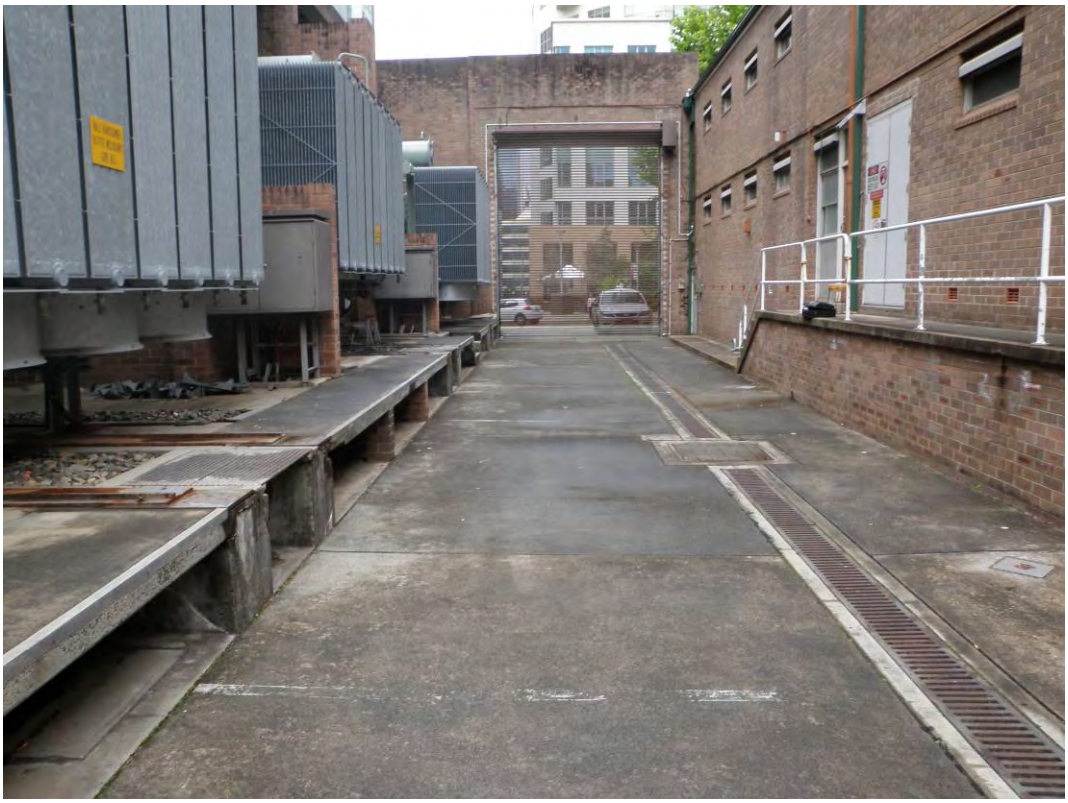

Plate P 1 Entrance to Substation

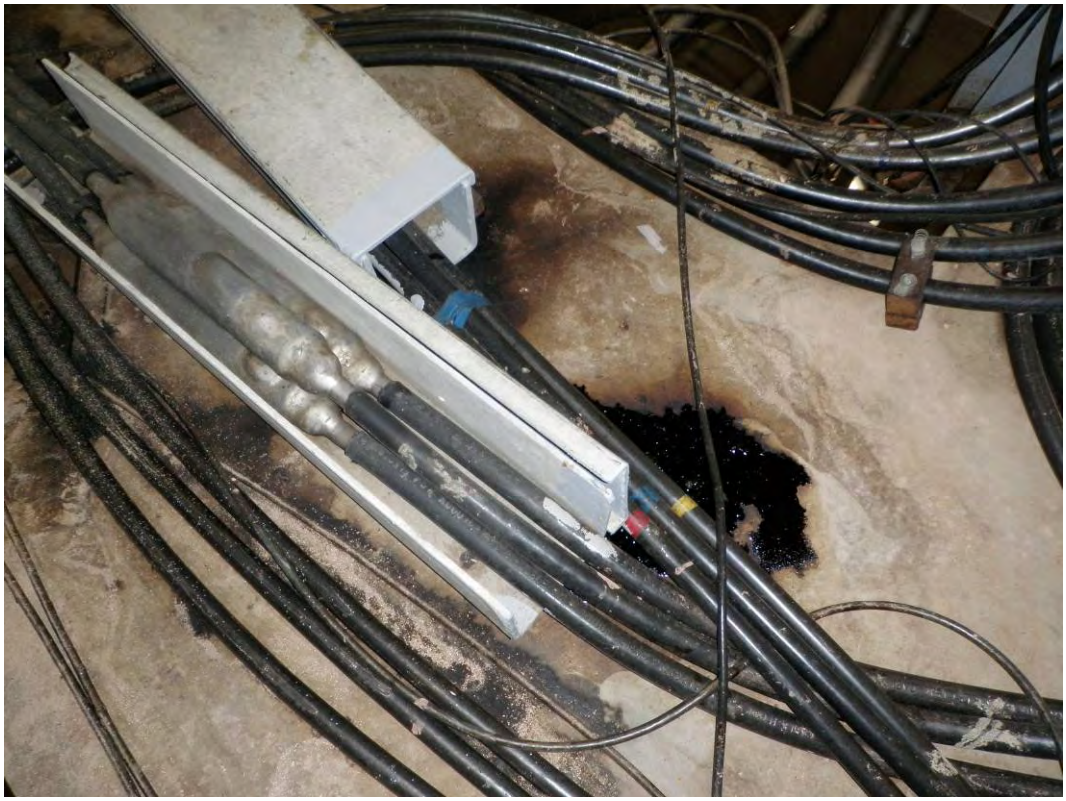

Plate P 2 Cable Room - Asbestos Boxing and Tar Leak

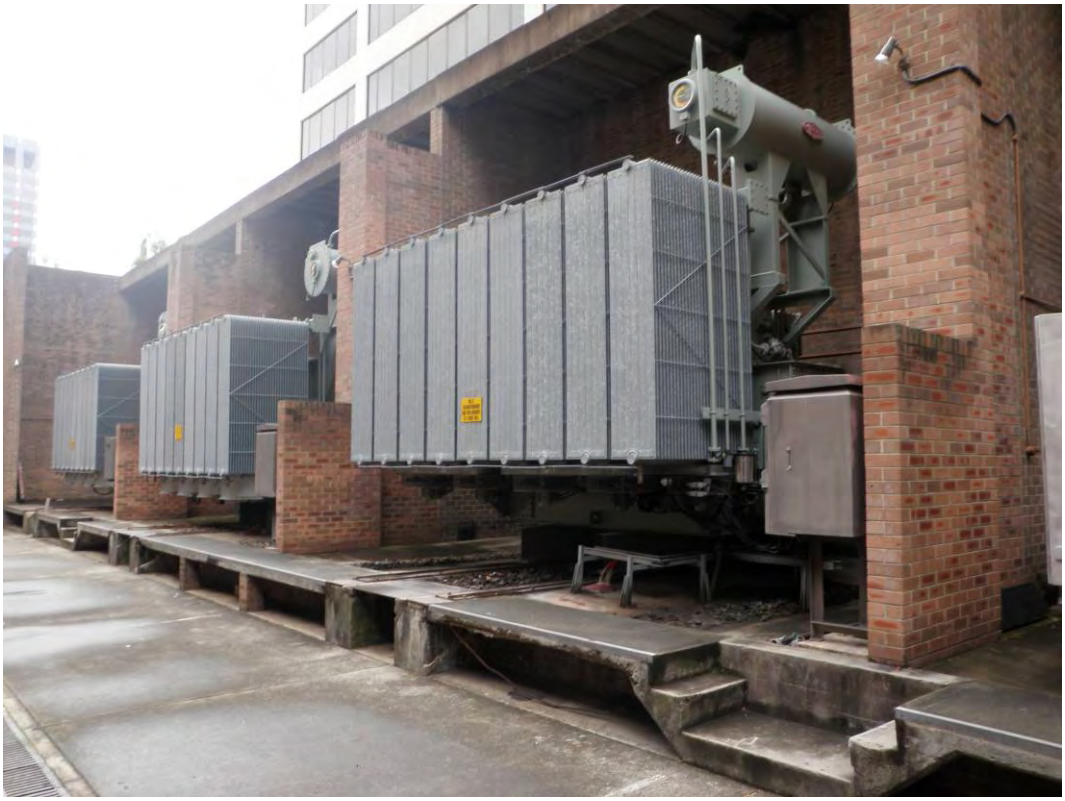

Plate P 3 Row of Transformers

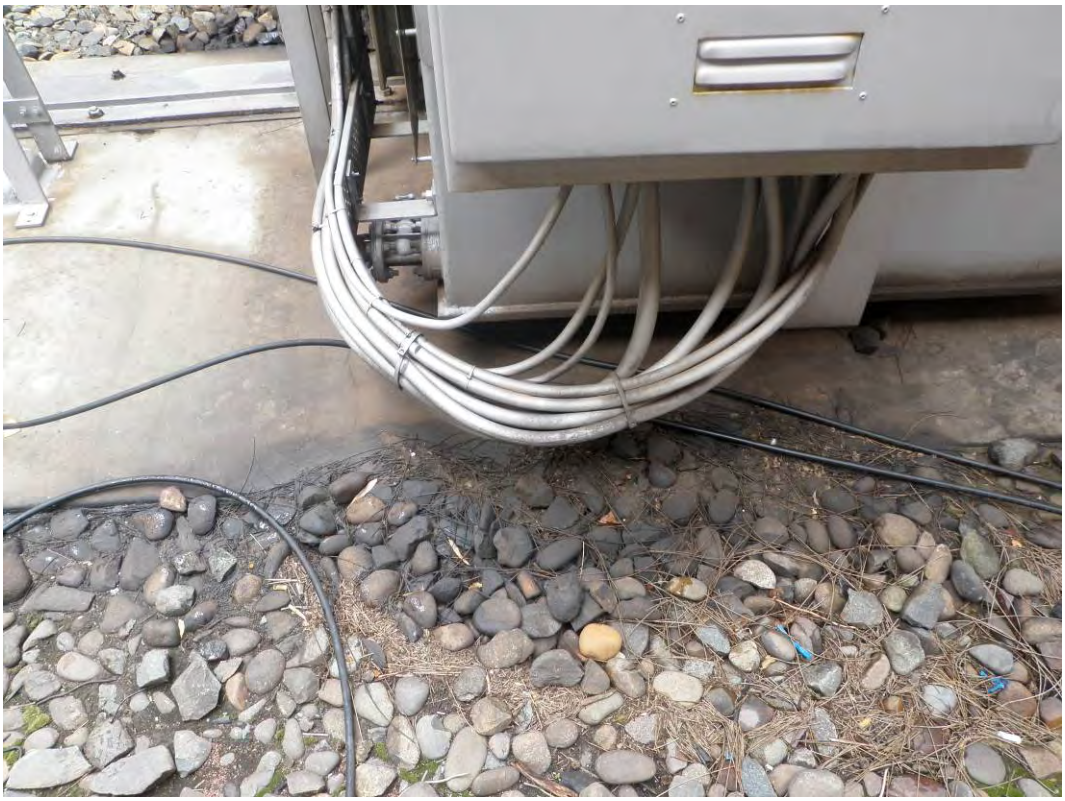

Plate P 4 Oil Staining beneath Transformer

Appendix A

Groundwater Bore Search

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