TECHNICAL REPORT NO 1

CONTAMINATION REPORT

CES

CONSULTING
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CONTAMINATION SUMMARY REPORT:
PROPOSED INTEGRATED RECYCLING PARK
1 GRAND AVENUE, CAMELLIA, NSW.
PREPARED FOR NECS PTY LTD.
REPORT ID: CES100111-NEC-01-F
Revision 2

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2	21/12/10	FINAL Contamination Summary Report (Document No. CES100111-NEC-01-F)

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LIST OF ABBREVIATIONS

ACM	Asbestos Containing Materials
AHD	Australian Height Datum
AMG	Australian Map Grid
ANZECC	Australian and New Zealand Environment and Conservation Council
ARMCANZ	Agriculture and Resource Management Council of Australia and New Zealand
ASS	Acid Sulphate Soils
ASSMAC	Acid Sulfate Soil Management Advisory Council
AST	Aboveground Storage Tank
BTEX	Benzene, Toluene, Ethylbenzene and Total Xylenes
CES	Consulting Earth Scientists Pty Ltd
CT	Contaminant Threshold
dBA	Average Decibel Pressure Level
DEC	Department of Environment and Conservation
DECC	Department of Environment and Climate Change
DECCW	Department of Environment, Climate Change and Water
DLWC	Department of Land and Water Conservation
DNR	Department of Natural Resources
DO	Dissolved Oxygen
EIL	Ecological Investigation Levels
EMP	Environmental Management Plan
ENM	Excavated Natural Material
EPA	Environment Protection Authority
ESA	Environmental Site Assessment
HDPE	High Density Polyethylene
HIL	Health Based Investigation Levels
LGA	Local Government Area
mBGL	metres Below Ground Level
NATA	National Association of Testing Authorities
NEPC	National Environmental Protection Council
NRMRC	National Health and Medical Research Council
NSW	New South Wales
OCP	Organochlorine Pesticides
OHS	Occupational Health and Safety
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlronated Biphenyls
PID	Photoionisation Detector
PPE	Personnel Protective Equipment

PSP	Project Safety Plan
RAC	Remediation Acceptance Criteria
RAP	Remediation Action Plan
RDOP	Remediation Design Optimisation Programme
SAC	Site Assessment Criteria
SAS	Site Audit Statement
SCC	Specific Contaminant Concentrations
SREP	Sydney Regional Environmental Plan
SWMS	Safe Work Method Statement
TCLP	Toxicity Characteristic Leaching Procedure
TDS	Total Dissolved Solids
TOG	Total Oil and Grease
TSS	Total Suspended Solids
TPH	Total Petroleum Hydrocarbons
UST	Underground Storage Tank
VENM	Virgin Excavated Natural Material
VOC	Volatile Organic Compounds

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1 INTRODUCTION

Consulting Earth Scientists (CES) was commissioned by National Environmental Consulting Services Pty Ltd (NECS) to prepare a Contamination Summary Report (CSR) for a portion of the site located at 1 Grand Avenue, Camellia, NSW as part of the Environmental Assessment (EA) for a proposed integrated Alternative Waste Treatment Facility (AWT) to be known as the REMONDIS Integrated Recycling Park (RIRP). For the purpose of this CSR, the areas subject to this CSR are as follows:

- Former James Hardie Industries (JHI) site: Being both the western and eastern portions of the 1 Grand Avenue site separated by the Clyde - Carlingford Railway;
- The site: Being the eastern portion of the 1 Grand Avenue site; and
- The development area: Being the area of the site subject to the proposed RIRP.

CES understands that REMONDIS Pty Ltd (REMONDIS) is seeking the approval for the construction and operation of the RIRP on the development area. REMONDIS considers that the proposed development is a major project to which Part 3A of the Environmental Planning and Assessment Act 1979 (EP&A Act) applies.

The proposed development area is part of a larger site which prior to 1996 was occupied by JHI for the manufacture of fibrous cements (including asbestos), chemical manufacturing and related products.

The former JHI site consisted mainly of warehouse buildings which have since been demolished down to ground level. Large quantities of fill material have been used to level various parts of the JHI site. Fill materials at the JHI site are impacted with asbestos cement waste and friable asbestos and other contaminants. Due to the presence of some asbestos within the underlying fill materials at the JHI site, all fill materials at the site have been assumed to be impacted by asbestos (as a minimum).

Sydney Water Corporation (SWC) acquired the JHI site in 1996 and in 2000, the NSW Environmental Protection Authority (EPA) declared that the former JHI site represented a "Significant Risk of Harm" as defined under Sections 7, Section 9 (1) and Section 15 (1) in the Contaminated Land Management Act 1997 (CLM Act). SWC undertook rehabilitation works

under a Voluntary Remediation Agreement (VRA). As part of the VRA the site was capped with hard standing which provided an effective barrier to human contact. No further remedial works were considered necessary by the NSW EPA under the VRA, however the site is now subject to a Site Management Plan (SMP). The SMP has been implemented to manage and mitigate any risks associated with on site activities (maintenance, redevelopment etc) which have the potential to disturb the cap or the contaminated material beneath it.

This CSR provides an overview of the environmental condition of the site, with respect to contamination and is based on a review of previous investigations undertaken at the site and other available information. No intrusive investigation work was undertaken in support of this study as numerous investigations have been conducted to date which provide significant detail on the environmental condition of the site.

CES understand that the RIRP and associated structures will be built on a raised engineered platform above the existing site seal. The only penetration of the site seal will occur during the installation of underground services for the RIRP.

Considering that the proposed development, with the exception of the installation of services, will be constructed on a raised engineered platform above the existing seal and that this will provide an effective barrier between the contamination and future site occupiers/users and the proposed development, this study will focus on the potential during the construction of the RIRP to breach the seal and disturb the underlying impacted fill material (ie. during the installation of underground services) and where relevant, will outline the management measures that would be required during the site development to protect the environment and human health.

2 OBJECTIVES AND SCOPE OF WORK

The objectives of the CSR are as follows:

- To provide a summary of the existing site conditions of the development area for inclusion into the EA being prepared in support of the proposed development, which will be subject to Part 3A of the EP&A Act; and
- To assess the likely impacts that the proposed development may have in the context of existing contamination (i.e. disturbance of contaminated and asbestos impacted materials).

To meet the objectives of the CSR, CES have undertaken the following scope of works:

- Review of the following reports and plans specific to the site for the purpose of assessing the impacts associated with the proposed development and disturbance of the cap and underlying contaminated and asbestos impacted materials;

CES 2007a	*Targeted Environmental Site Assessment, 1 Grand Avenue, Camellia,* prepared for Billbergia Group by Consulting Earth Scientists Pty Ltd (CES), October 2007;
CES 2007b	*Geotechnical Investigation Report, Proposed Industrial Development, 1 Grand Avenue Camellia*, prepared for Billbergia Group by Consulting Earth Scientists Pty Ltd (CES) November 2007
ENVIRON 2006	*Site Audit Report and Site Audit Statement, Eastern Site, 1 Grand Avenue, Camellia*, prepared for Sydney Water Corporation by ENVIRON Australia Pty Ltd, November 2006;
URS 2006	*Phase II Environmental Site Assessment, Sydney Water Camellia Eastern Site, 1 Grand Avenue, Camellia NSW*, prepared for by URS Australia Pty Ltd, October 2006;
SWC 2003	*Final Report: Resampling of Groundwater Monitoring Wells, former James Hardie Site, Camellia* prepared for Sydney Water Corporation, Group Properties by Sydney Water Corporation, May 2003

SWC 2002	*Final Report: Resampling of Groundwater Monitoring Wells, Former James Hardie Site, Camellia,* prepared for Sydney Water Corporation, Group Properties by Sydney Water Corporation, July 2002;
AWT 2001	*Soil Sampling and Groundwater Monitoring, Former James Hardie Site, Camellia*, prepared for Sydney Water Corporation by Australian Water Technologies dated June 2001;
AWT 1999	*Contamination Management Plan - Former James Hardie Site Camellia* prepared for Sydney Water Corporation by Australian Water Technologies, November 1999;
WWC 1995	*Phase II Audit Site Investigations - James Hardie, Camellia* prepared by AGC Woodward-Clyde Pty Ltd for James Hardie & Coy Pty Ltd, July 1995; and
WWC 1994	*Phase 1 Environmental Audit Report on the James Hardie Property, Camellia* prepared by AGC Woodward-Clyde Pty Ltd for James Hardie & Coy Pty Ltd, December 1994.

- Provide a report which summarises the existing site conditions (soils, geology, topography and contamination) for inclusion in the EA and assess the likely impacts of the proposed development in the context of existing contamination.

3 PROJECT DESCRIPTION – PROPOSED DEVELOPMENT

3.1 PROJECT DESCRIPTION

The proposed RIRP comprises two AWT plants for the following:

- Commercial and Industrial Resource Recovery Facility (CIRRF); and
- Source Separated Organic Resource Recovery Facility (SSORRF).

Both plants are designed to maximise recovery of resources for market and minimise disposal to landfill.

- The CIRRF will be capable of receiving and processing up to 100,000 tonnes per annum (tpa); and
- The SSORRF is capable of receiving and composting up to 50,000 tpa of mainly green and food wastes.

The waste streams will be sourced from within the greater Sydney Metropolitan Area and delivered by collection contractors.

3.2 CIRRF

The CIRRF will utilise a combination of mechanical separation, front end sorting using both automated and manual processes together with tunnel composting.

The plant will recover recyclable materials from the commercial and industrial waste stream, convert the putrescible waste into inert waste for class II disposal in order to minimise the volume that needs to be landfilled and improve the environmental standard of the remaining landfilled material.

3.3 SSORRF

The SSORF will process source separated organic materials which have been collected at kerbside from metropolitan Council areas for the production of high grade organic fertilisers and compost products for marketing and sale. The process integrates a front end mechanical pre-treatment process system to remove contamination from the material prior to the tunnel composting process.

3.4 PROPOSED DEVELOPMENT

Based on information provided by NECS, CES understand that the proposed development will consist of the following elements.

3.4.1 Levels

The existing concrete capping is at approximately 5.3m Australian Height Datum (AHD) which forms the base for the lowest structure of the development being the humidifier pit. Working off this datum establishes the Finished Floor Levels (FFLs) for the integrated structures such as the biofilter basement (6.1m AHD), the tunnel rear (7.0m AHD) and the main building floor level (7.2m AHD). The main building concrete apron falls off in order to connect between the main building FFL and the circular road (6.3m AHD). The fall accommodates a controlled stormwater drainage and collection system, and desired minimal falls for operation requirements (heavy vehicular traffic).

3.4.2 Engineered Platform

Preliminary estimates to build the platform are between 45,000 and 50,000 m^3 or 90,000 to 100,000 tonnes of imported clean fill. The platform will be sealed through heavy-duty concrete pavement on a compacted sub-base. Roads (perimeter road etc.) and car parks will be built using road base material complying with RTA standards.

The overarching objective for the platform design is to avoid the penetration of the capping for the construction of the main buildings and structures of the RIRP once all services have been provided by the developer (Billbergia) to the requirements for the project.

3.4.3 Main Buildings

The main building complex includes the entire green waste delivery and pre-treatment facilities complete with all equipment, compost tunnels and hallway. The entire facility is fully enclosed and air ventilated.

The building will be of steel portal-framed construction, fully enclosed and complete with Colorbond® roof sheeting. All exposed steelwork will be hot dipped galvanized to accommodate the corrosive environment associated with the process activities undertaken within the building.

3.4.4 Tunnels

The composting tunnels are reinforced and tight sealed concrete structures of a special concrete mix to resist the high temperature range, corrosive atmosphere and aggressive leachate. The tunnel floor will be an aeration slab poured onto a working slab, both of which are made from

reinforced concrete. Custom design trenches will be cast into the slab in arrays over the length of the tunnel and connect to the ductwork via pipes poured into the slab. The tunnel roof will integrate air ventilation and sprinkler systems.

3.4.5 Biofilter

The biofilter will be a concrete structure for the filter basement with either a perforated concrete or hardwood grate on support frame over the basement over the biofilter area. The concrete basement will fall towards the connected humidifier chamber via an air distribution inlet channel. Humidifier and connection will be of reinforced concrete with manhole access. A Colorbond® roof without insulation will be provided over the biofilter area.

3.4.6 Access Road

The access road will provide trucks with direct access to the proposed development from Grand Avenue. There will be a secondary road that links from Grand Avenue to the Office Building. The dual road system will separate the traffic for Waste Collection Trucks from staff or private cars.

3.4.7 Weighbridge & Car Park

The development will include a weighbridge on the access road to enable recording of container and truck volumes and numbers. An area of 800m^2 for an administration and staff amenities building will be located to the northwest corner of the main building, with a car parking area provided. The car parking area will allow for 40 employees, with a total of 40 car parking spaces and 10 visitor car parking spaces and provision for bus parking.

4 SITE INFORMATION

The following information has been taken from the CES (2007a) *Targeted Environmental Site Assessment, 1 Grand Avenue, Camellia, NSW*.

The former JHI site occupied an area of approximately 13.82 hectares (Ha) or 138,200 m^2. The JHI site has since been divided into two parcels of land, located on the eastern and western sides of the Clyde-Carlingford Railway Line. The two parcels divided by the railway line are known as the eastern (approximately 77,800 m^2 in area) and western (approximately 60,400 m^2 in area) portions of the site.

The locality of the JHI site is shown on Figure 1 while the site layout is shown in Figure 2.

4.1 SITE IDENTIFICATION

The site is located at 1 Grand Avenue, Camellia. The footprint of the proposed RIRP occupies an approximate area of 4,500 m^2 within the eastern part of the former JHI land.

The site is identified as Lot 1 in DP 226202, Lot 1 & 2 in DP 579735, Lot 201 in DP 669350 and Lot 1 in DP 721503 in the Local Government Area (LGA) of Parramatta City Council, Parish of Melville, County of Cumberland.

4.2 SITE DESCRIPTION

The site is generally rectangular in shape with its northern boundary following the meandering south bank of the Parramatta River. Entry to the site is via Grande Parade, which leads to the Camellia Railway Station and car parking area. The site is bounded by the Parramatta River to the north, industrial premises to the east, vacant land adjacent to the Clyde-Carlingford Railway line to the west and a spur goods line to the south. The development area incorporates the most eastern portion of the site.

The site is level and vacant with no existing building or structures. Approximately 95% of the total site area is covered with hard standing at surface which comprises concrete and bitumen, the remaining 5% of the site is grassed.

4.3 SITE ZONING AND LAND USE

A review of the Sydney Regional Environmental Plan (SREP No.28) indicated that the site is zoned "Regional Enterprise", which is further defined as "*a zone suitable for a variety of industrial and heavy industrial activities serving the Greater Metropolitan Area.*" The SREP applies to the site (including the development area) as it is located within the Regional Enterprise Zone in the Camellia Precinct under the plan. Although the majority of the site is zoned Regional Enterprise, partial areas are also zoned for Transport, Environmental Protection and Open Space. The Environmental Protection and Open Space Zones are discussed in more detail in the following sections.

4.3.1 Environmental Protection Zone

The Environmental Protection Zone (EPZ) comprises a 30 m wide strip of land situated along the foreshore of the southern bank of the Parramatta River. The zone extends from the edge of the southern river bank in a southerly direction over a distance of 30 m towards the centre of the site.

For clarification and as outlined in the Preliminary Environmental Assessment (PEA) for the proposed IRF (NECS, 2009), no development work is proposed within the area designated as an EPZ.

4.3.2 Open Space Zone

A small area on the northern portion of the site is zoned open space. Based on information presented in the PEA, CES understands that this area of the site has been excluded from the development area as this portion of the site has been listed on Schedule 1 of the Parramatta Local Environmental Plan, 2008 (PLEP).

4.3.3 Parramatta City Council Local Environmental Plan 2008

Further review of the PLEP indicates that the site is currently zoned 'IN3 Heavy Industry'. The foreshore of the site is zoned 'E2 Environmental Conservation', while the north eastern corner known as Mackies Flat located between the rail corridor and Parramatta River is zoned 'RE 1 Public Recreation.

As detailed in the PEA (NECS, 2009) for the proposed development, the eastern portion of the JHI site is also listed in Schedule 1 of the LEP in respect of the grave of Eliner Magee and Child. The grave is located adjacent to the railway line and as stated in the PEA, the grave will not be affected by the proposed development.

4.4 TOPOGRAPHY AND DRAINAGE

Review of the Parramatta River 9130-3-N, 1:25,000 Topographic Map (Central Mapping Authority 1986) indicates that the site has an elevation of approximately 10m Australian Height Datum (AHD) and is located on the southern bank of the Parramatta River. The site and surrounding land is relatively flat. The embankment along the river foreshore is approximately 3 – 5m high and generally slopes towards the Parramatta River.

CES undertook an inspection of the site in September 2007. The CES (2007a) report noted that the site was substantially sealed at the surface with concrete and bituminous concrete pavements and as such, precipitation falling on the site would run off, ultimately into Parramatta River to the north of the site. It was also noted in the report that while a number of gridded, surface storm water drains and spoon drains are known to be present on the site, it is not known what the status of any underground storm water system may be. The report also makes reference to a large diameter fibrous cement pipe, located just above the water level of the river on the outer surface of the retaining wall which ran parallel with the northern boundary of the site. The pipe was presumed to be part of the storm water management system for the site.

4.5 GEOLOGY AND SOILS

4.5.1 Geology

The 1:100,00 Geological Series Sheet Sydney 9130, (Edition 1, 1983) indicated that the site geology contains Quaternary alluvial deposits comprising silty to peaty quartz, sand, silt and clay with minor ferruginous and humic cementations with occasional shell layers. The depositional environment is likely to be an alluvial estuarine environment.

Bedrock underlying the fill and Quaternary sediments is expected to be part of the Wianamatta Group shales, comprising black to grey shale and laminated.

4.5.2 Soils

Review of the Sydney 1:100 000 Soil Landscape Series Sheet 9130 (Soil Conservation Service of NSW) indicated that that the site is underlain by disturbed terrain which has been extensively disturbed by human activity including complete disturbance, removal or burial of soil. Local relief is typically less than 10 metres with slopes of less than 30 percent. The review of the soil map also indicated that the area of the site was developed terrain.

The site stratigraphy, as observed in the boreholes and estimated from the CPT probes conducted by CES (2007b) typically comprised fill material overlying natural alluvial soils, which in turn is underlain by sandstone bedrock. The main variation across the site relates to the depth of fill and the consistency / relative density of the alluvial soils.

Across the site, the depth of fill material is relatively shallow (< 1.0m) with the many locations encountering natural alluvial soils directly beneath the pavement (including any granular base-course layer). The fill material contained asbestos in parts, building rubble, concrete, sand, gravel and clay. The alluvial soils comprised interbedded clay, silty clay, sandy clay, clayey sand and sand, which is typical of a river depositional soil profile. The alluvial soil was red-brown, brown, yellow-brown and grey in colour, and at least stiff and/or medium dense in consistency / relative density. Some loose and soft to firm layers were present, although these were rare.

4.6 HYDROGEOLOGY

4.6.1 Regional Hydrogeology

The direction of groundwater flow, based on available information (URS, 2006), is generally to the north towards Parramatta River. Given the proximity of the site to the Parramatta River and the data from previous groundwater monitoring events conducted across the site, the localised groundwater table is expected to vary between 1.5-5.0 meters below ground level (mBGL). Given the close proximity of the site to the Parramatta River, there is likely to be connectivity between surface water and groundwater.

4.6.2 Local Hydrogeology

Additional assessment of groundwater levels completed by CES (2007a) generally confirmed the findings of URS (2006) that the overall flow of the groundwater was to the north east, towards the river and that there was a mound in the northern portion of the site which was modifying the flow pattern. Another, smaller mound in the water table was indicated by data collected from wells installed by CES, in the south of the site. While not as pronounced as the northern mound, the southern mound also had the effect of modifying the groundwater flow towards the river.

In addition, CES installed a data logger in one of the wells located within the northern portion of the site and recorded level changes in the water levels over a period of a week. The data collected indicated that the groundwater in that area of the site is tidally influenced and water table levels fluctuate by as much as approximately 0.2 metres.

Woodward Clyde (1994) noted that surface water runoff and storm water was discharged directly into the Parramatta River from the site's storm water system. The report noted that historical waste water discharges are not documented in detail, however anecdotal information obtained from interviews with former James Hardie employees suggested that from the early 1970's process water generated in the manufacture of fibre cement on the eastern portion of the site was directed to a waste water treatment and recycling plant. Any water excess to recycling demands was discharged to the Parramatta River.

CES (2007a) also made reference to a concrete lined channel, at the bottom of what was believed to have been a former basement level in the north-western part of the site. The channel was believed to have been used for the collection of waste water used in former manufacturing processes undertaken on the site. The channel is presumed to have directed waste water to a waste water treatment plant previously located in the northern part of the site. The remains of the water treatment plant were observed during a site walkover (25 September 2007) and comprised a sump with a weir, that connected to the basement level channel. It was likely that the channel discharges storm water directly from the site to the Parramatta River.

Previous investigations undertaken at the site have highlighted a wide variety of permeabilities in the site's natural soils which range from relatively impermeable (natural clays) encountered in some areas of the site at surface, and underlain by permeable coarse alluvial gravels at depth. URS (2006) calculated a velocity of 0.002m/day based on an effective porosity of 0.1 (silty clay) and a hydraulic gradient of 0.004. Additional slug testing conducted by SWC in May 2003 estimated the hydraulic conductivity to be between 0.01 and 0.4m/day.

4.7 ACID SULFATE SOIL RISK

Review of the Prospect/Parramatta River Acid Sulfate Soil (ASS) Risk Map (Edition 2, Department of Land and Water Conservation, 1997) indicated that the site is underlain by 'Disturbed Terrain' which may include areas filled to reclaim low lying swamps. Consequently the risk of ASS being present can only be determined by investigations below the existing fill material. Given that deep excavations below the extent of the fill materials or lowering of the water table are not expected to occur as part of the proposed redevelopment of the site, the presence of ASS is not considered to be an issue for the proposed development.

4.8 SITE HISTORY

The following summary of site history is taken from a number of previous investigation reports reviewed as part of this study. Where relevant the reports have been referenced.

Based on information available on the Parramatta City Council website (http://www.parracity.nsw.gov.au/) it is believed that prior to 1917 the main use of the area of the site was for agricultural or residential purposes.

Woodward Clyde (WWC) were commissioned by James Hardie & Co Pty Ltd to undertake an extensive Phase 1 Audit of the former JHI site as part of the divestment and due diligence process, prior to the sale of the site to the Water Board (now SWC).

The following summary of the sites history is taken from WWC (1994) *Phase 1 Environmental Audit Report on the James Hardie Property, Camellia.*

Filling of the JHI site is believed to have commenced from the earliest occupation by James Hardie with that part of the site being progressively filled and developed between 1917 and the mid 1960s. The fill comprised mainly asbestos wastes but also included a significant volume of boiler ash. The asbestos waste comprised friable pulp waste from the manufacturing process as well as, presumably, out of specification and excess bonded asbestos products. Some of the products may have been coated with bitumen, zinc silicate and other paints. No records were found which mentioned imported fill was used on the site.

Other chemicals, mainly hydrocarbon-based (eg diesel, hydraulic oil and petrol) were extensively used and stored on the site and are believed potentially to have been disposed on site.

James Hardie continued production of fibrous cement products until 1993 when production ceased and the site was decommissioned. Between 1995 and 2001 the buildings were demolished to slab levels and building rubble was used to level some areas of the site where there were steps in the slabs. The site was acquired by SWC in 1996 and it is understood that the site has not been occupied since that time.

In 1999, SWC formally notified NSW EPA under section 60 of the CLM Act that the site was contaminated and may have posed a Significant Risk of Harm. In 2000, SWC entered into a VRA with the NSW EPA to clean up surface asbestos contamination at the site and to improve surface seals (concrete and bituminous concrete pavements) to ensure that buried asbestos waste was isolated so that exposure pathways to humans and the environment were not present. The VRA also contained a Contamination Management Plan (CMP) to ensure that remedial measures implemented were effective and maintained into the future. On 14 May 2003, the NSW EPA gave notice that the terms of the VRA had been satisfactorily completed.

The following summary of historical title information (Table 1) is based on information sourced from the Woodward Clyde (1994) report and covers the JHI site for the period between 1816 and

1994 when the report was completed. CES have populated the table from 1994 onwards to include other relevant information pertaining to the site.

Table 1: Summary of Site History

Date	Description
1816-1897	Land Granted to John MacArthur. Use unknown: however WCC 1994 indicate that the site is likely to have been used for rural and residential land use.
1897-1916	Various owners of the site in this period (farmers etc) and companies including the Camellia Chemical Company and Rheem Australia. The site was used for light industrial purposes.
1916	JH purchase approximately 4 ha on the eastern side of the Clyde-Carlingford Railway
1918	JH purchase an additional 3 ha of land on the site
1918 -1994	North eastern portion of the site was used for the storage of drums. In 1958 the land between the Clyde-Carlingford railway line, River Road and the Parramatta River was purchased. River Road was acquired in 1971. Two parcels of land adjacent to the river were purchased from the Maritime Services Board (MSB) 1976. Consolidation of the titles in the eastern area occurred in 1989.
1994-1996	Demolition of the JH site. All buildings demolished down to slab level.
1996	SWC acquires the site.
2000	NSW EPA declares that the JH site represented a "Significant Risk of Harm" to human health and the environment under Sections 7, 9 (1), 15 (1) and 21 (1) of the CLM Act. SWC submits a VRP to the NSW EPA. The NSW EPA accepts the VRP and enters into a VRA with SWC (Agreement No. 26012).
2000	Australian Water Technologies were commissioned by SWC to prepare a CMP prepared for the JH Site.
2001-2002	SWC undertakes remediation of the site in accordance with the VRA.
2003	NSW EPA gives notice that the terms of the VRP had been satisfactorily completed in accordance with Section 26 (5) of the CLM Act and determines that the site no longer presents a "Significant Risk of Harm" to human health or the environment.
2004	SWC develops Site Management Plan (SMP) which contains a Safe Work Plan (SWP) for the site to replace the former CMP. The NSW EPA registers a public positive covenant on the titles of the JH site under Section 29 of the CLM Act and Section 88E of the Conveyancing Act 1919. The terms of the covenant require the site owners to maintain remediation of the properties under the SMP.

5 ENVIRONMENTAL SITE CONDITION

The following section presents a detailed summary of the environmental condition of the site with regards to soil and groundwater contamination.

5.1 POTENTIALLY CONTAMINATING ACTIVITIES

A number of processes and activities undertaken during the historical operation of the site had the potential to cause contamination. These included:

- Use of asbestos contaminated wastes as fill across the site;
- Storage and use of petroleum fuels (diesel and petrol);
- Storage and use of diesel oil as a mould release agent in the asbestos cement manufacturing process;
- The storage and use of bitumen for the impregnation of asbestos cement products (eg electrical backing boards, pipes);
- The storage and use of zinc silicate-based paints;
- The use of electrical transformers located across the site; and
- The generation of coal ash from boilers located in a boiler house on the southern boundary, it is understood that the ash was extensively used as sub-grade for roads and slabs across the site.

Figure 3 presents a historical site layout plan of the former JHI facility which indicates the locations of the former facilities, tanks and other potential areas of concern.

5.2 CONTAMINANTS OF CONCERN

Based on a review of the previous investigations, CES (2007a) identified the contaminants of concern at the site as asbestos, petroleum hydrocarbons (TPH, BTEX and PAH) and metals.

5.3 CONTAMINATION SOURCES

A summary of the contamination sources present on the site, as determined from previous environmental investigations conducted by WWC (1995), URS (2006) and CES (2007a) are summarised below. The information is specific to the site (incorporating the development area).

- The site is not as extensively filled but was probably unsealed for longer than the western side of the JHI site, particularly in the south eastern corner, which appears to have been

used for storage, possibly of finished products. Asbestos wastes were not extensively used as fill on the site (in comparison to the western portion of the JHI site) but are present as bonded wastes and as fibres (identified in samples of fill materials);

- Hydrocarbon products, including diesel, petroleum and kerosene, were used, stored and potentially disposed on site. URS and CES defined two main areas of hydrocarbon contamination in soil/fill in the central northern and in the central southern portions of the site;

- The hydrocarbon impact in the central northern portion of the site was believed to have resulted from the use of an oil press in that area and appeared to be relatively limited in extent based on available data;

- The contamination in the central northern portion of the site was located within an area of groundwater mounding, defined by URS and confirmed by CES. Hydrocarbon contamination was not encountered in groundwater wells believed to be down gradient of the mound which may indicate that groundwater and associated hydrocarbon contamination in that area may be constrained by a subsurface structure causing the mounding rather than being a result of a leaking water pipe or similar as suggested by URS; and

- The contamination in the central southern portion of the site was associated with Underground Storage Tanks (UST) reported to have been used to store diesel, unleaded petrol and kerosene. No information was available about whether the tanks had been abandoned appropriately or whether that they still contained hydrocarbon product or were leaking. If the tanks had been appropriately abandoned, the contamination encountered had resulted from leaks and spills that occurred during the past use of the tanks. Information about the location of any associated pipe work and delivery pumps that may have previously been present was not available.

5.4 CONTAMINATION STATUS

A detailed summary of intrusive investigations undertaken by URS and CES within the respective contamination source areas is presented below. The investigation areas are presented on Figure 3.

- Area A: Northern central portion of the site in the vicinity of the former oil press and hydraulic conveyer;

- Area B: Central portion of the southern boundary in the vicinity of the former boiler house and USTs used to store diesel oil/fuel;
- Area C: East of Area B in the vicinity of a former pipe dipping tank and two USTs;
- Area D: Running along the north-south axis of the site in the central part in the vicinity of a former railway spur; and
- Area F: North eastern portion of the site in the vicinity of a UST formerly used to store diesel oil.

5.5 SOIL CONTAMINATION

Soil impacts have been principally attributed to the filling of the site with asbestos wastes, storage and/or usage of hydrocarbons and the historical operation of facilities such as the oil press, power house, boiler house and wash down areas.

Soil sampling was undertaken by URS (from 76 borehole locations) and by CES (from 46 borehole locations) across the site. WWC had previously also undertaken some sampling. The following summary has been adopted from the interim advice provided by the NSW DECCW accredited site auditor (Graeme Nyland) as part of the site audit commissioned by Bilbergia.

5.5.1 Asbestos in Soils (Entire Site)

Suspected asbestos containing materials, such as 'tiles and washouts', were collected by CES from the surface where encountered. Of the eleven samples submitted for analysis six (> 50%) contained asbestos.

Sub-surface investigations were undertaken mainly by URS with additional sampling undertaken by CES in conjunction with targeted excavations. Visual observations of asbestos were recorded on borehole logs. 95 samples, including those with visual asbestos and without, were laboratory analysed with 49 positive detections. Visible asbestos as 'fibro sheeting' which in places was pulp textured loose asbestos was encountered over the western portion of the site. The base of asbestos detections ranged from 0.3 mBGL in the south to approximately 4 mBGL adjacent to the railway.

5.5.2 Petroleum Hydrocarbons in Soil (Area A)

Of the 19 boreholes excavated by URS and CES within approximately 30 m of the oil press, acid wash and mould wash areas, TPH C_{10}-C_{36} was detected at elevated concentrations (11,730 mg/kg in soil at 0.8 mBGL and 1,700 mg/kg at 5 mBGL) at two locations adjacent to pits and in the oil press area. An adjacent sample collected by WWC reported TPH C_{10}-C_{36} at 9,900 mg/kg at approximately 1.5 mBGL and 4,300 mg/kg at approximately 2 mBGL.

In the vicinity of the mould wash down area, CES reported TPH C_{10}-C_{36} at 4,450 mg/kg and PAHs at 723 mg/kg in soil at 0.4-0.5 mBGL. All other sample results within 15 m of the mould wash down area were not reported above the laboratory Levels of Reporting (LORs).

5.5.3 Petroleum Hydrocarbons in Soil (Area B)

Boreholes were spaced approximately 15 m apart with two positioned directly adjacent to the former unleaded and leaded USTs. The most elevated concentrations of petroleum hydrocarbons were reported in samples collected adjacent to the USTs at approximately 4.5 mBGL (maximum of 2,280 mg/kg) and at the surface (maximum of 4,000 mg/kg). Low concentrations of TPH and PAHs were reported in all other samples collected in the vicinity of the USTs.

In samples collected from 0.2 and 0.5 mBGL within the former boiler house, TPH was reported by URS at 1,190 mg/kg and 14,450 mg/kg respectively. The vertical extent of the TPH impact was not delineated. CES noted that the contamination was thought to be associated with fill material and not the USTs.

5.5.4 Petroleum Hydrocarbons in Soil (Area C)

Boreholes were positioned in and adjacent to the former tank footprint. Intrusive work indicated that the former tank footprint appeared to be an in filled pit. At the base of the pit fill consisted of bituminous coated concrete asbestos sheeting. This material was sampled and reported significantly elevated concentrations of TPH C_6-C_9 (90,100 mg/kg), TPH C_{10}-C_{36} (320,900 mg/kg), ethylbenzene (2,560 mg/kg) and total xylenes (21,860 mg/kg). Samples collected outside of the tank footprint generally did not report petroleum hydrocarbons above the LORs.

5.5.5 Petroleum Hydrocarbons in Soil (Area D)

A former railway spur that extended north-south was reported to contain oil stained sleepers prior to covering with concrete. Detections of petroleum hydrocarbons were reported in all three sample locations with a TPH C_{10}-C_{36} (maximum of 1,590 mg/kg), ethyl benzene (1.2 mg/kg) and total xylenes (10.5 mg/kg). The detections were reported in fill materials (gravels, ash and bitumen) located in the upper 1 m of the soil profile. The boreholes were extended to 4 mBGL into natural materials.

5.5.6 Petroleum Hydrocarbons in Soil (Area F)

A diesel UST located adjacent to the western boundary was targeted by WWC. The samples were collected at depths of 0.5 mBGL and 1.75 mBGL. TPHs were not detected above the

LORs. It was not clear whether these samples were deep enough to assess potential impacts from the tank.

An additional sample was collected by CES in the near vicinity of the UST and to the north-east (15m distance) that did not report petroleum hydrocarbons above the LORs. A further three boreholes immediately adjacent to the UST reached refusal in the asbestos cement fill at 0.9 mBGL.

5.5.7 Petroleum Hydrocarbons in Soil (Remainder of the Site)

Detections of petroleum hydrocarbons that were investigated by URS (without further investigation by CES) included the following:

- URS reported TPH (maximum of 6,990 mg/kg) either side of the sewage discharge point at depths of between 0.1 - 0.2 mBGL; and
- Concentrations of TPH C_{10}-C_{36} were reported to the west of the rail line at or marginally above 1,000 mg/kg. The detections are thought to be associated with fill materials.

5.5.8 PAH and Metals in Soil (Entire Site)

PAHs (123 mg/kg) and benzo(a)pyrene (12 mg/kg) were reported in one sample collected from 0.5 mBGL within a former grease trap location. Other elevated concentrations of PAHs were reported in samples collected from the former oil press area (729 mg/kg) in Area A and from bituminous materials (5,949 mg/kg) comprising mainly of naphthalene.

URS concluded that the fill was the most likely source of PAH concentrations in the parking area and the grease trap area. There is no discussion of the past uses of these areas. The fill materials were similar to those reported across the site and the auditor noted that there were no indications of impact elsewhere.

Concentrations of arsenic in the south-west corner (705 mg/kg), cadmium (1,490 mg/kg) adjacent to the oil sump in Area B and in the north-west corner (110 mg/kg) were reported.

URS indicated that the source of metals is likely to be the fill however the fill materials were similar to those encountered over the site. Given that the results for cadmium and arsenic were inconsistent with those detected in fill over the remainder of the site, the auditor considered that the impacts at these locations had not been characterised.

5.6 GROUNDWATER RESULTS

Groundwater monitoring has been undertaken at the site since 2001 as follows: AWT (2001), SWC (2002 & 2003), WWC (1995), URS (2006) and CES (2007a). For the purpose of this CSR, CES have reviewed the most recent data sets for groundwater samples collected by URS and CES.

Groundwater impacts have been principally attributed to the storage and/or usage of hydrocarbons and the historical operation of facilities such as the oil press, power house, boiler house and wash down areas and regional contamination issues within the area.

Groundwater samples were collected by URS from 11 wells in January 2006 and by CES from 16 wells in November 2007 including five wells previously installed by URS and WWC.

5.6.1 Petroleum Hydrocarbons in Groundwater (Site Boundaries)

TPH C_6-C_9 was reported at 30 µg/l at the northern boundary of the site, nearest to the Parramatta River and at 90 µg/l at the eastern boundary of the site.

5.6.2 Petroleum Hydrocarbons in Groundwater (Area A)

Table 2 presents the results of groundwater sampling undertaken by CES and URS within Area A and has been adapted from site audit report.

Table 2: Summary of Groundwater Impacts – Area A

AREA	Area of Environmental Concern (AEC)	Position relative to AEC	URS 2006	CES 2007a
AREA A	Former hydraulic conveyor	At AEC	--	TPH C_{10}-C_{36} reported at 1,580 µg/l
		Down gradient	TPH C_{10}-C_{36} reported at 24,410 µg/l (Chromatogram indicates an oil source)	TPH C_{10}-C_{36} reported at 500 µg/l (Chromatogram indicates an oil source) – CES noted a 1-3 mm layer of product (PSH).
		Up gradient	TPH C_{10}-C_{36} reported at 1,752 µg/l and naphthalene at	TPH C_{10}-C_{36} reported at 109 µg/l and naphthalene at 95 µg/l – Strong hydrocarbon

AREA	Area of Environmental Concern (AEC)	Position relative to AEC	URS 2006	CES 2007a
	Former oil press and acid tank		1140 µg/l – Chromatogram indicated a diesel source.	odour noted and 5mm of PSH
		Down gradient	--	TPH C_6-C_9 – Reported at 30 µg/l – 1-3 mm of layer of PSH
		Down gradient	--	Consistent with earlier findings by WWC, TPH was not reported above the LORs
	Former mould wash down area	Cross gradient	--	Consistent with earlier findings by WWC, TPH was not reported above the LORs

5.6.3 Petroleum Hydrocarbons in Groundwater (Area B)

TPH C_{10}-C_{36} (5,780 µg/l) and naphthalene (126 µg/l) concentrations reported in groundwater from a monitoring well located adjacent to former diesel USTs corresponded to the elevated TPH concentrations reported for soil samples taken from approximately 4.5 mBGL at this location. Strong hydrocarbon odours were also noted in the field as well as 5 mm of PSH and surface sheen on the water samples collected.

5.6.4 Petroleum Hydrocarbons in Groundwater (Area C)

TPH, PAH and bituminous impacts were noted in soil from Area C particularly at the base of an in filled pit (1-1.4 mBGL), presumed to be the former pipe dipping tanks, however no hydrocarbons were detected in groundwater by the laboratory. A 1-3 mm layer of PSH was measured in a well down gradient from the former dipping pit.

5.6.5 Petroleum Hydrocarbons in Groundwater (Area F)

Concentrations of TPH C_{10}-C_{36} (1,000 µg/l) were reported in groundwater samples collected from the western boundary of the site and 25m to the south of a former diesel UST. Groundwater contours calculated by CES suggested that the groundwater flow direction in this part of the site is to the south-east (cross gradient from the source) compared to the inferred and

assumed northerly groundwater flow direction for the rest of the site towards the Parramatta River.

The interim advice provided by the auditor suggested that the hydrocarbon impacts detailed above are likely to be localised and as a direct result of the historic usage and storage of hydrocarbon products on the site.

5.6.6 Metals in Groundwater (Entire Site)

Groundwater across the site was characterised by metals, primarily copper and zinc, at concentrations that exceeded the trigger values. The most elevated concentration of zinc was reported at the eastern down-gradient boundary of the site. The metals results were consistent with those reported in previous investigations where copper, lead and zinc were reported at slightly elevated concentrations.

The auditor noted that metal impacts in groundwater (principally copper and zinc) may be attributed to a wider regional groundwater issue as the concentrations reported were consistent with the groundwater results reported in previous investigations.

5.7 CONTAMINATION ISSUES AROUND THE CAMELLIA PENNINSULA

A number of properties located on Grand Avenue, Camellia are subject to regulation under the CLM Act due to contamination issues. Table 3 presents a summary of the sites listed on the NSW DECCW Contaminated Sites data base and record of notices.

Table 3: Sites in the locality regulated under the CLM Act

Address	Site owner	Contaminants of concern	Regulation (most current)
6-10 Grand Avenue	Akzo Chemicals	Volatile Chlorinated Hydrocarbons	VRP
12 Grand Avenue	Mobil Australia	Hexavalent Chromium, Hydrocarbons in groundwater (Phase separated and dissolved phase) discharging to the Parramatta River	Approved VMP
14 Grand Avenue	Hymix Australia	Significant Hexavalent Chromium issues in groundwater discharging to the Parramatta River	Declaration of investigation order
37 Grand Avenue	Veolia Environmental	Significant Hexavalent Chromium issues in groundwater	Declaration of a remediation site and

	Services	discharging to the Parramatta River	approved VMP
39 Grand Avenue	Asciano Properties Operations Pty Ltd	Significant Hexavalent Chromium issues in groundwater discharging to the Parramatta River	Declaration of investigation area Declaration of remediation site Approved VMP
41 Grand Avenue	SWC	Significant Hexavalent Chromium issues in groundwater discharging to the Parramatta River	Notice to end investigation declaration

Source: DECCW Contaminated land data base (Record of notices).

6 REGULATION AND MANAGEMENT

The following section provides an overview of the regulation and management of the contamination at the site..

6.1 SECTION 60 NOTIFICATION

On 21 July 1999, SWC lodged a Section 60 notification for the JHI site. The Section 60 notification relates to duty to report contamination and was lodged as a result of buried asbestos fill materials (bonded and free) being present over the majority of the JHI site. The Section 60 notification also made reference to buried arsenic contamination located on the western portion of the JHI site.

6.2 SIGNIFICANT RISK OF HARM

On 30 March 2000, following lodgement of the Section 60 notification, the NSW EPA determined that the JHI site posed a Significant Risk of Harm under Section 9 of the CLM Act. The following concerns were noted by the NSW EPA in a letter (Ref: HOF2811/CHF8382/02) dated 30 March 2000:

- Potential exposure of future on-site workers to asbestos contamination, in filled areas of the site and along the embankment to Parramatta River that is not adequately sealed to prevent such exposure;

- Potential exposure of future on site workers to arsenic contamination in filled areas of the site and risk of harm to human health due to inhalation of airborne asbestos; and

- Potential for groundwater contaminated with zinc, phenol, polycyclic aromatic hydrocarbons to migrate beyond the boundary of the site, particularly the Parramatta River.

The letter acknowledges that a CMP for the site had been prepared to avoid disturbance of the fill material and procedures for action should disturbance occur, however given the significant risk of harm determination, the NSW EPA recommended that a formal program for remediation and management of the site was warranted and provided options available to manage contamination at the site under a VRA.

6.3 VOLUNTARY REMEDIATION AGREEMENT

SWC prepared and submitted a VRA together with a CMP to the NSW EPA on 16 August 2000. The CMP also contained a draft example of a Safe Work Plan (SWP).
The remediation agreement presented a management approach for the identified and existing contamination at the site. In summary the proposal provided the following management approach to the existing contamination:

- Appropriate capping of the entire site;
- Regular inspection and maintenance of the surface covers;
- Annual monitoring of groundwater; and
- The implementation of a SWP.

The VRA and SWP were accepted by the NSW EPA.

6.4 COMPLETION OF THE VOLUNTARY REMEDIATION AGREEMENT

SWC informed the NSW EPA that they had completed the program of works (capping) under the VRA on 7 February 2003. The works involved:

- Capping of unsealed areas of the site;

- Installation of marker layers above the contaminated material to mark the boundary between the asbestos impacted sub-surface materials and the overlying, clean capping material;

- Exposed soils in poorly grassed areas or under trees where rainwater percolation was still required were delineated with orange marker layers and capped with very coarse mesh, blue metal/shale or where necessary re-turfed and with kikuyu grass;

- The banks of the Parramatta River were left uncapped given the presence of dense mangrove vegetation along the banks. SWC were of the opinion that the existing mangrove vegetation present along the banks of the Parramatta River provided an adequate barrier to the impacted fill. SWC decided that rather than destroying the mangrove and capping the banks, it would be best to leave the banks as they were until full scale demolition works were proposed for the site;

- Exposed areas along the services easement located along the western site boundary that runs parallel with the railway line were re-turfed or capped with coarse blue metal. No orange marker tape was used along the services easement for future operational reasons;

- A SWP was developed for the site in the event that easement holders needed to undertake excavation works in response to a service failure of one of the easement pipelines or cables. The correspondence from SWC suggested that copies of the emergency SWP have been forwarded to the five easement holders;

- Signage (20 signs in total) has been erected, across the site advising of buried hazardous material and prohibiting unauthorised excavations;

- Regular inspections of the site have been undertaken to monitor the condition of the surface cap. The correspondence from SWC indicates that the site has been vacant and secured since the completion of the remediation works and as such deterioration of the site capping was minimal;

- Clearance certificates were prepared by qualified occupational hygienists following an inspection of the site;

- Regular groundwater monitoring at the site had confirmed that no significant levels of contaminants above natural background levels were migrating from the site;

- A CMP developed for the site had been adopted and copies of the plan provided to former leases of the site;

- In addition to the above, SWC also removed remaining asbestos cement products that covered remaining buildings on the site and demolished and removed buildings down to slab level;

- As part of the demolition works, all asbestos, PCB and synthetic mineral fibre materials were removed from the buildings and disposed off-site in accordance with relevant regulations and guidelines; and

- The CMP and SWP were reviewed and were deemed adequate for the management of contamination issues on the site.

SWC indicated that the VRA had been satisfactorily completed and that no areas on the site were exposed where access to buried asbestos waste was possible.

7 MANAGEMENT OF CONTAMINATION

Based on the proposed development details provided by NECS and considering the environmental condition of the site (with respect to contamination), CES considers that only during the installation of services is there the potential to breach the site seal and disturb the underlying fill material, which will increase the risk of exposure to the identified contamination.

CES considers that the management procedures outlined in the existing SMP, if implemented, would be adequate in minimising the exposure of site occupants and the environment to the identified contamination during the construction of the proposed facility on the site. With the exception of the repair of underground services (where required), there is unlikely to be the need to excavate into and expose the underlying contaminated materials during operation of the proposed RIRP.

8 CONCLUSIONS

CES has prepared the CSR for a portion of the site located at 1 Grand Avenue, Camellia, NSW.

The site (fill, soil and groundwater) is contaminated by asbestos, hydrocarbons (TPH, BTEX and PAH) and metals associated with the filling of the site with asbestos wastes, storage and/or usage of hydrocarbons, the historical operation of facilities such as the oil press, power house, boiler house and wash down areas and regional contamination issues present within the Camellia peninsula.

Considering that the proposed RIRP and associated structures will be constructed on a raised engineered platform above the existing site seal, the only penetration of the site seal will occur during the installation of underground services for the RIRP which could expose site occupants and the environment to the identified contamination. If the management procedures outlined in the existing SMP are implemented, these would be adequate in minimising the exposure of site occupants and the environment to the identified contamination during the construction of the proposed facility on the site.

With the exception of the repair of underground services (if required), there is unlikely to be the need to excavate into and expose the underlying contaminated materials during operation of the proposed RIRP.

9 LIMITATIONS OF THIS REPORT

This report has been prepared for use by the client who commissioned the works in accordance with the project brief and based on information provided by the client. The advice contained in this report relates only to the current project and all results, conclusions and recommendations should be reviewed by a competent person with experience in environmental investigations before being used for any other purpose. Consulting Earth Scientists Pty Ltd (CES) accepts no liability for use or interpretation by any person or body other than the client. This report must not be reproduced except in full and must not be amended in any way without prior approval by the client and CES.

The CSR has been prepared from information obtained from previous investigations undertaken on the site. The extent of sampling and analysis of soils and groundwater has been undertaken targeting areas of environmental concern, targeting specific soil strata from where contamination is considered most likely to occur based on knowledge of site history and visual inspection. This approach has been adopted in order to maximise the probability of identifying contaminants, however the approach may not identify contamination that occurs in unexpected locations or from unexpected sources.

Furthermore, soil, rock and aquifer conditions are variable, resulting in the heterogeneous distribution of contaminants across the site. Contaminants have been identified at discrete locations; however conditions between sample locations have been inferred based on estimated geological and hydrogeological conditions, the nature and extent of identified contamination. Boundaries between zones of variable contamination are generally unclear and have been interpreted based on available data and professional judgement. The accuracy with which subsurface conditions have been characterised depends on the frequency of sampling, field and laboratory methods, the uniformity of the substrate and is therefore limited by the scope of works undertaken.

This report is based on information from previous investigations and does not provide a complete assessment of the environmental status of the site and is limited to the scope defined therein. Should information become available regarding conditions at the site including previously unknown sources of contamination, CES reserves the right to review the report in the context of the additional information.

10 REFERENCES

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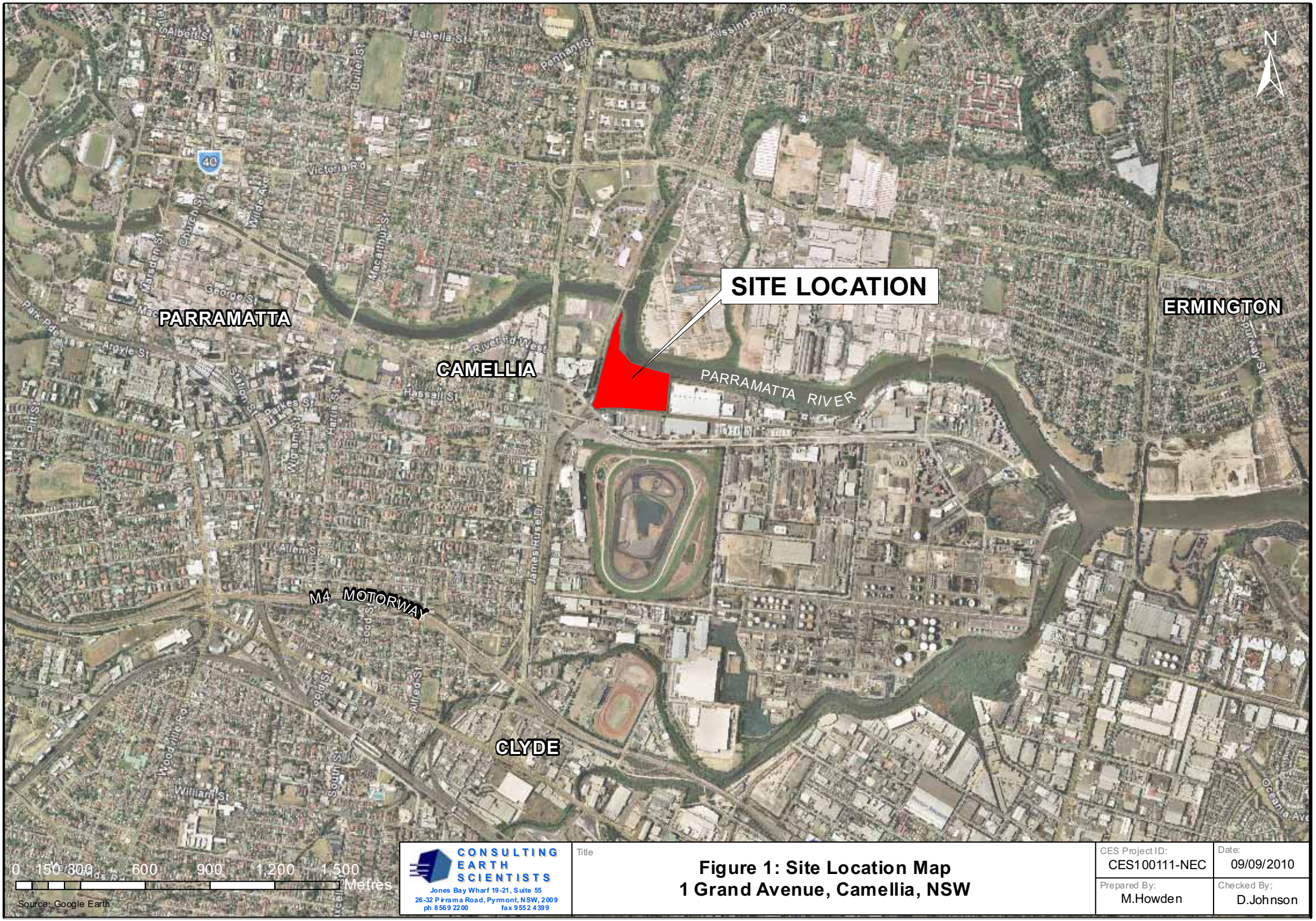
Figures



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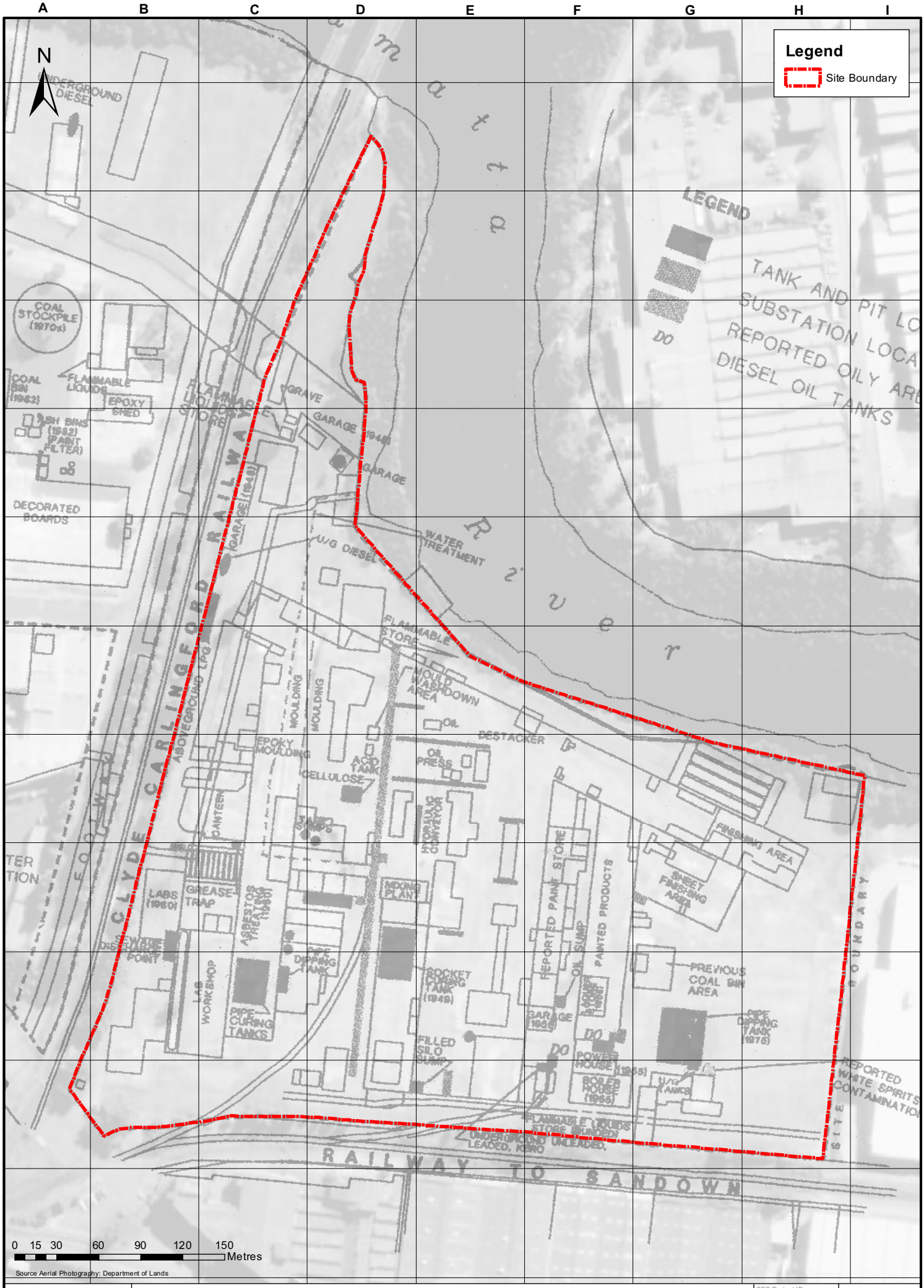
Title

Figure 1: Site Location Map
1 Grand Avenue, Camellia, NSW

CES Project ID:	Date:
CES100111-NEC	09/09/2010
Prepared By: M.Howden	Checked By: D.Johnson



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Title

Figure 2: 1 Grand Ave, Camellia
Site Layout

CES Project ID:	Date:
CES100111-NEC	09/09/2010
Prepared By: M.Howden	Checked By: D.Johnson

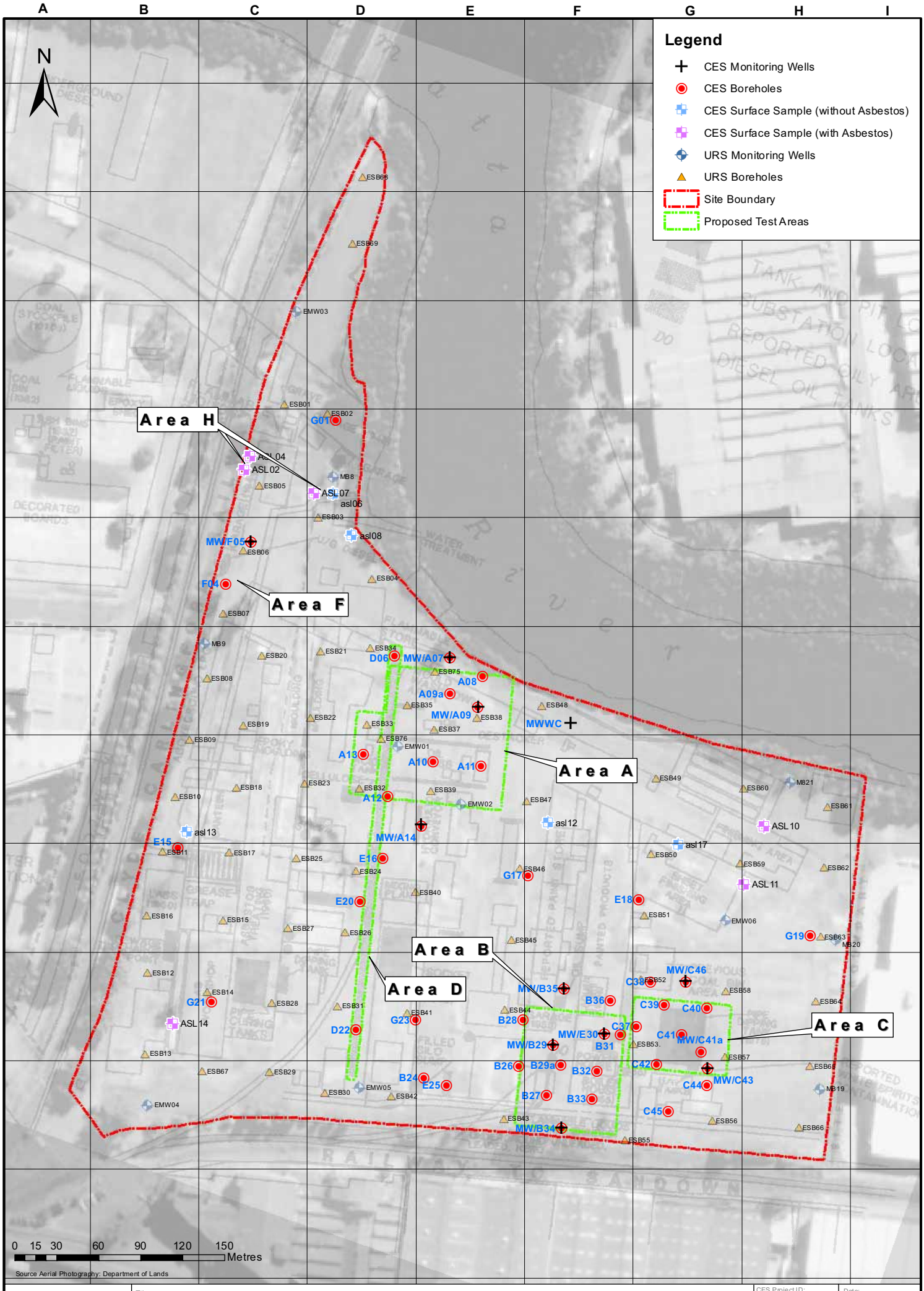

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Figure 3: 1 Grand Ave, Camellia
AECs and Sample Locations

CES Project ID:	Date:
CES100111-NEC	09/09/2010
Prepared By: M.Howden	Checked By: D.Johnson