3. LOCATION AND SITE DESCRIPTION

This section provides a description of the site in terms of its history, location and surrounding land uses.

3.1 DEVELOPMENT SITE DESCRIPTION

The site of the proposed RIRP at 1 Grand Avenue, Camellia (refer Figure 1.1) is located within Part Lot 1/DP 226202, Lot 1/DP 579735 and Part Lot 2/DP 579735. The RIRP site consists of an area of approximately 4.5 hectares (ha) and is located within a larger parcel of land (approx 7.4ha) owned by Billbergia. The site has previously been cleared, levelled and capped with "hard" surfaces of concrete and bitumen. The remainder of the Billbergia site is currently used for the storage of shipping containers. REMONDIS will lease the RIRP site from Billbergia. Plates 3.1, 3.2 and 3.3 provide an indication of the existing condition of the site surface and northern boundary adjacent to the Parramatta River.

3.2 ENVIRONMENT PROTECTION ZONE

The northern boundary of the site forms part of an Environment Protection Zone adjacent to the Parramatta River. The Environment Protection Zone comprises an approximately 30m wide corridor of land along the bank of the River. The use of this land is subject to the provisions of SREP No 28 and the draft LEP as described in Section 2 of this EA. The Environment Protection Zone within the site is capped with concrete hardstand. There is a concrete retaining wall which runs for the length of the site along the northern site boundary between the site and the River. Narrow patches of Mangrove Forest ranging between one and four metres in width are located along the river foreshore with some Mangroves actively collapsing into the river. Stretches of the foreshore along the site boundary no longer include a vegetated riparian zone with the river being in direct contact with the constructed wall.

No development works are proposed on the land within the Environment Protection Zone with the aim of minimising disturbance to the site cap established as part of the remediation works for the site. As part of the commitment to minimise disturbance to the site cap landscaping within the Environment Protection Zone has been designed utilising movable concrete containers. This also provides flexibility for meeting any future requirements in relation to provision of access for pedestrians/cyclists through the Environment Protection Zone.

3.3 SURROUNDING LAND USES

The site of the proposed RIRP is located approximately 18km west of the Sydney CBD at 1 Grand Avenue, Camellia in the Parramatta City LGA. The site is approximately 200m east of James Ruse Drive and 100m north of Rosehill Racecourse (refer Figures 1.1 and 1.2). Camellia is an industrial suburb about five kilometres east of Parramatta city centre, on the south bank of the Parramatta River. The suburb is defined by Clay Cliff Creek to the west, Duck River to the east, and Grand Avenue to the south.

The major roads dissecting the suburb are Grand Avenue (east-west) and James Ruse Drive (north-south). The Clyde-Carlingford railway line and the Clyde-Sandown spur goods rail line are located adjacent to the site. The site boundaries are defined to the west by the remainder of the Billbergia site and the Clyde-Carlingford railway line, to the south by the Clyde-Sandown spur line which is located within an easement between the site and offices, retail and industrial premises accessed off Grand Avenue, to the east by industrial premises and to the north by the Parramatta River.

Plate 3.1 View across site facing South East (DSCA 2010)

Plate 3.2 A View of the northern boundary of the site adjacent to the Parramatta River facing East (DSCA 2010)

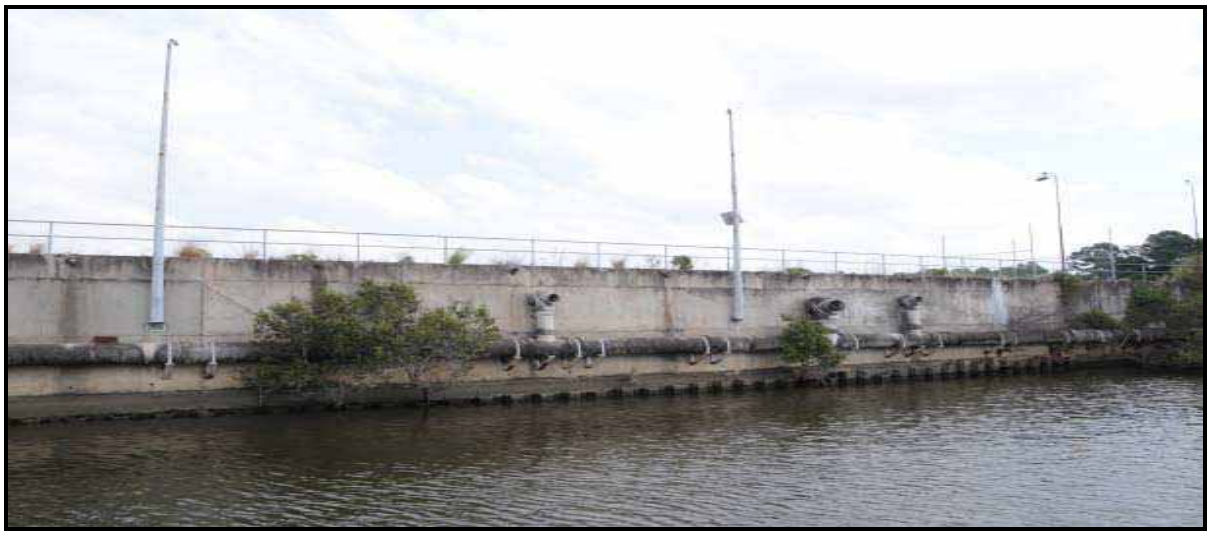

Plate 3.3 View of site adjacent to the Parramatta River (Source Biosis 2010)

There are industrial developments beyond the northern bank of the Parramatta River. The University of Western Sydney, Parramatta Campus is located adjacent to the River and James Ruse Drive to the west of the Clyde-Carlingford rail line.

Rosehill Racecourse and Rosehill Gardens Event Centre are located on the opposite side of Grand Avenue to the south of the site.

There is a single residence approximately 100m to the west of the site. The nearest residential area is to the south west on James Ruse Drive about 285m from the site boundary. A number of commercial land uses are located adjacent to James Ruse Drive.

On the southern edge of the site between the goods rail line and Grand Avenue there are recently established commercial premises within the Tilrox/Aldi building occupied by a child care centre, an international college, café and a number of offices (refer Plate 3.4 and Figure 3.1). An Aldi supermarket and car park are located adjacent to this building.

Camellia Railway Station is located adjacent to the site entry (refer Figure 3.1, Plates 3.5 and 3.6).

3.4 SITE HISTORY AND CONDITION

Consulting Earth Scientists (CES) was commissioned to prepare a Contamination Summary Report to provide an overview of the condition of the site in terms of contamination (refer Technical Report No 1). The following section provides the findings of the report.

3.4.1 Site History

Background

The site is part of a larger area of land which prior to 1996 was occupied by James Hardie (JH) for the manufacture of fibrous cement and related products and chemical manufacturing.

The former JH 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 site. Fill materials at the 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 site, all fill materials at the site have been assumed to be impacted by asbestos.

As discussed in Section 1, Sydney Water Corporation (SWC) acquired the site in 1996 and in 2000, the NSW 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 *CLM Act 1997*. SWC undertook rehabilitation works under a 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 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.

Table 3.1 provides a summary of historical title information for the JH site (refer Technical Report No 1).

Plate 3.4 – View from the site of Aldi CarPark and Tilrox Building (including Child Care Centre) which are located to the south of the site.

Plate 3.5 View to Camellia Railway Station and entry to the site on the right between the rail crossing and the station.

Plate 3.6 – Site Entrance

Figure 3.1 **Sensitive Receivers**

Table 3.1
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 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 SMP which contains a 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.
2007	Site acquired by Billbergia

3.4.2 Site Condition

The following summary is taken from a number of previous reports reviewed as part of study prepared by CES (refer Technical Report No 1). Where relevant the reports have been referenced.

Filling of the JH site is believed to have commenced from the earliest occupation by James Hardie with 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 mentioned that 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.

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

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

Contaminants of Concern

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

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 (2007) is provided in this section. The information is specific to the JH site (incorporating the development area):

- The site is not as extensively filled but was probably unsealed for longer than the western side of the JH 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 JH site) but are present as bonded wastes and as fibres (identified in samples of fill materials);

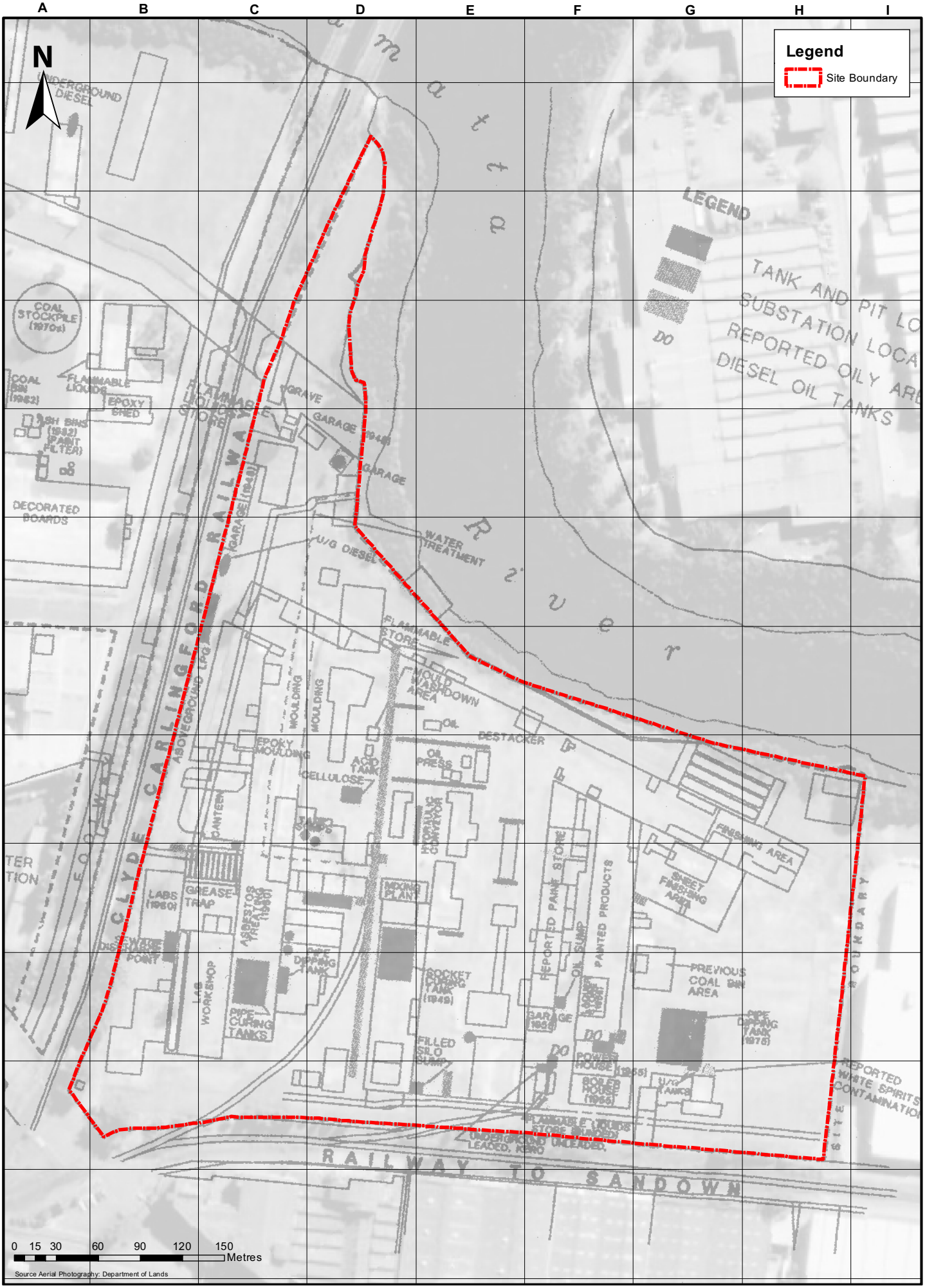

Figure 3.2 **Historical Site Layout Grand Avenue Camellia**

Source : CES 2010

- 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.

Contamination Status

A detailed summary of intrusive investigations undertaken by URS and CES within the respective contamination source areas is presented in Technical Report No 1. The investigation areas are presented in Figure 3.3:

- 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.

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 as part of the site audit commissioned by Bilbergia.

- 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.

- 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 C10-C36 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 C10-C36 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 C10-C36 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).

- 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.

- 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 C6-C9 (90,100 mg/kg), TPH C10-C36 (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.

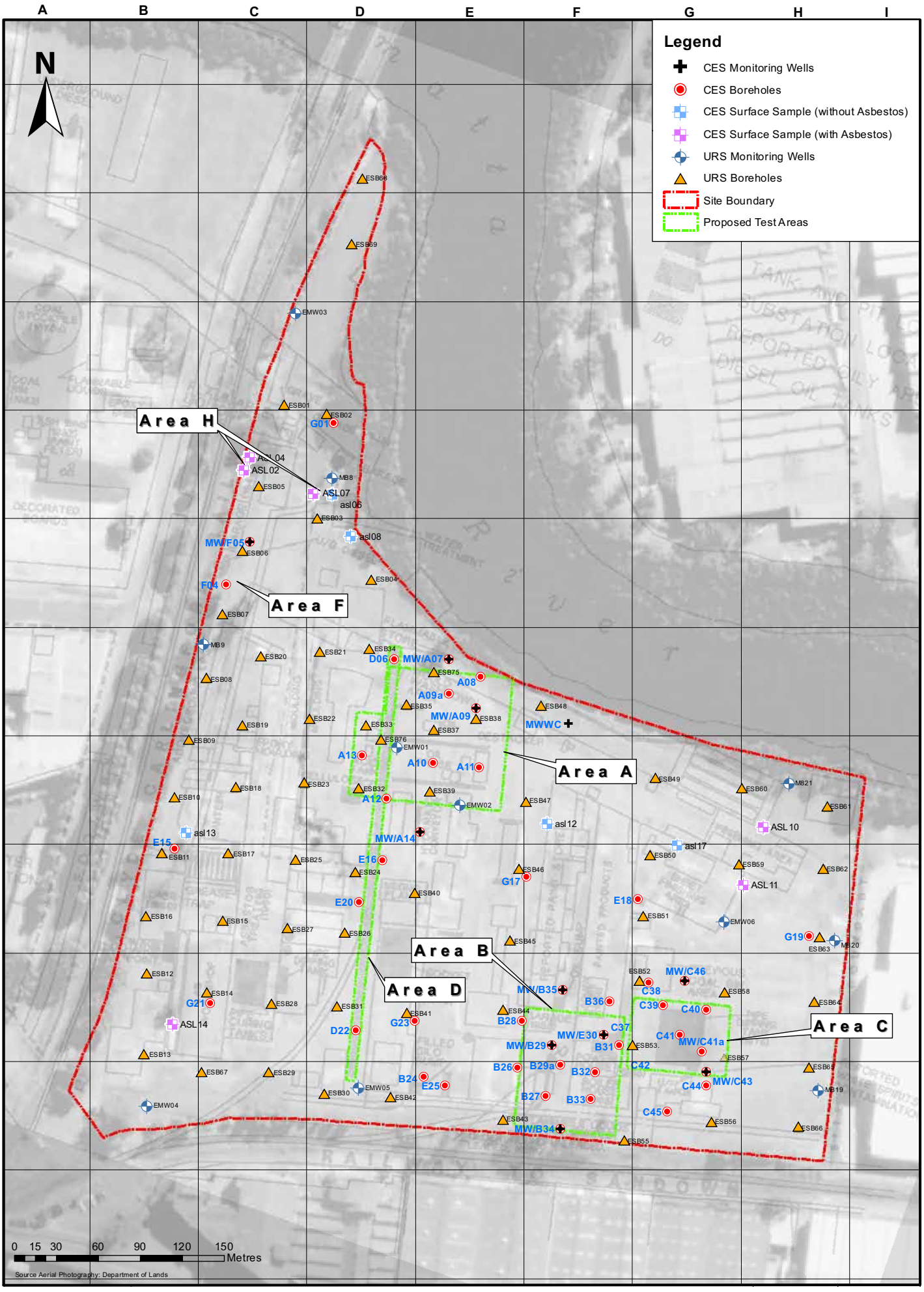

Figure 3.3 **1 Grand Avenue Camellia AECs and Sample Locations**

Source : CES 2010

- 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 C10-C36 (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.

- 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.

- 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 C10-C36 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.

- 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.

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 (2007). CES have reviewed the most recent data sets for groundwater samples collected by URS and CES (refer Technical Report No 1).

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. TPH C6-C9 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. Technical Report No 1 provides further detail of specific results.

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.

Current Status

During 2001 and 2002, the site was capped with concrete hardstand by SWC as part of a CMP produced in 2000 under a VRA with the NSW EPA. On 14 May 2003, following the completion of capping and groundwater monitoring works the site was certified as no longer presenting a significant risk to human health or the environment.

A SMP was then developed by the NSW EPA in 2004 to manage containment issues, monitoring and mitigation of further contamination. In addition the NSW EPA registered a public positive covenant on the titles requiring the land owner to maintain remediation of the James Hardie sites in accordance with the SMP.