Ref. E22345 AA Rev 1
21 October 2014

Mr Nicholas Vargassoff,
Landmark East Pty Ltd
Level 2, 72 Macquarie Street
PARRAMATTA NSW 2150

Dear Mr Vargassoff,

RE: Review of Previous Environmental Assessment Report for 142-154 Macquarie Street, Parramatta, NSW

Environmental Investigations (EI) was engaged by Landmark East Pty Ltd (Landmark East) to review and comment on an environmental assessment report prepared for the property at 142-154 Macquarie Street, Parramatta NSW (the site).

Landmark East have submitted a planning proposal for the site to accommodate a mixed-use development including high density residential land-use.

The report subject of this review was:

- Douglas Partners (July 2010) *Report on Detailed Contamination Assessment, Cumberland Newspapers Redevelopment – Site A, 142-154 Macquarie Street Parramatta*, Douglas Partners Pty Ltd, (Ref: 71682, July 2010).

The information reported by Douglas Partners (DP July 2010) is summarised following.

Site Location and Description

The site was known as Lot 11 in DP790287 and occupied an area of approx. 13,000m^2. The site consisted of a building complex which occupied the southern two-thirds, a car park in the northern third and a smaller car park in the south-east corner.

The site was surrounded by the following activities and features:

- North: George Street, commercial properties. Parramatta River and foreshore beyond.
- East: Commercial properties (Albion Hotel), Harris Street. Playing field (Robin Thomas Reserve) beyond
- South: Macquarie Street. School (Rowland Hassall School) beyond.
- West: Argus Lane, commercial properties beyond

History

From review of the historical aerial photos provided in the report (DP, July 2010) the area of the current factory building was vacant land until at least 1951. The factory building complex was constructed by 1961 and underwent some expansion/extension since that time, but generally the configuration since construction was unchanged.

The current northern car park was predominantly residential in 1961 and was expanded by progressive demolition of dwellings. All bar one dwelling was demolished by 1982.

The area of the current south-western car park was occupied by a dwelling in 1951, which was demolished by 1961. The area remained vacant since at least 1986, and was being used as a car park by 1991.

Land Use

Manufacturing (newspaper production) commenced at the site during the 1950's. The land north and southeast of the manufacturing building was used for car parking

Underground petroleum storage systems (UPSS) were installed near the southwest quadrant of the north car park near the entrance from Argus Lane. Reported WorkCover Records regarding UPSS indicated that up to four USTs (2 x 20,000L (petrol), 2 x 5,000L (petrol, heating oil)) and one flammable goods depot were installed on site in the period from pre-1965 to 1992. One UST (most likely 1 x 20,000L) was excavated and removed by 1994. Three USTs (1 x 20,000L, 2 x 5,000L) were "abandoned" during year 2000. The flammable goods depot was not used after 1996.

Sub-Surface

The regional geology was described (DP July 2010) as Ashfield Shale which comprised black to grey shale and laminite. A boundary with a formation described as alluvial and estuarine sediment associated with the Parramatta River occurred east of the site.

The soil below the site was described by DP (July 2010) as follows:

Unit 1: Fill	Asphalt and road base to depth of 0.12m to 0.75m below ground surface (BGL). Sand and Clayey Sand, with inclusions of brick, ash, metal, glass, ceramics, to depth of 0.6m to 1.75mBGL.
Unit 2: Alluvium	Sand and Clayey Sand, loose, medium dense and dense, and Sandy Clay and Clay, stiff and very stiff; to depth of 5m to 8.5mBGL.
Unit 3 Residual Soil	Silty Clay and Shaley Clay, stiff, very stiff and hard, with some ironstone bands, to depth of 8.5m to 9.7mBGL.
Unit 4: Bedrock	Laminite/Siltstone, extremely low to very low strength, grading to Laminite, medium to very high strength, from depths of 8.8m to 12.75mBGL (limit of investigation)

Groundwater was encountered beneath the site during intrusive drilling. The water bearing zone generally occurred in sand at a reported commencing depth range of 3.45m (BH1) to 5.85mBGL (BH3). The piezometric slope was inferred from RLs of reported water-bearing zone to be east to north-east (towards Parramatta River).

Intrusive Sampling and Analysis – Soil

A total of 22 soil samples were collected from fill and underlying natural soil at 10 locations (BH1 to BH10) and analysed for contaminants of concern of:

- Metals: arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), lead (Pb), mercury (Hg), nickel (Ni), and zinc (Zn).
- Total petroleum hydrocarbons (TPH) of chainlength ranges: C_6-C_9, C_{10}-C_{14}, C_{15}-C_{28}, C_{29}-C_{36} (NSW EPA (1994) Service Station Guidelines).
- Benzene, toluene, ethylbenzene, xylenes (BTEX) compounds.
- Polycyclic aromatic hydrocarbons (PAHs) including benzo(α)pyrene (BaP).
- Organochlorine pesticides (OCPs).
- Organophosphorous pesticides (OPPs).
- Polychlorinated biphenyls (PCBs).
- Phenol.
- Asbestos (due to past demolition of residential dwellings to expand car parks).

The soil results were reported against NEHF F Health-based investigation levels for commercial and industrial land use listed in Appendix 2 of NSW EPA (2006) Guidelines for the NSW Site Auditor Scheme (2nd edition). These were derived from NEPM (1999) HIL-F soil investigation levels. TPH results were reported against sensitive land use thresholds listed in the NSW EPA (1994) Service Station Guidelines.

At the time of the assessment (July 2010) the site was proposed to be redeveloped for commercial use (commercial building without basement). The guidelines adopted for reporting purposes were appropriate at the time of the assessment work and reporting.

NEPM (1999) was amended in May 2013. The proposed land use as part of the rezoning for the site has been modified to one of high density residential (multi-storey apartments). The appropriate contemporary

guideline is NEPM (2013) HIL-B for a land use of residential with minimal opportunities for soil access (Residential B).

Review of the data reported by DP (July 2010) indicated the following:

- Lead exceeded HIL-B of 1,200mg/kg in fill at one location (BH5-1.0m, 1,500mg/kg). Lead did not exceed HIL-B and any other location.
- There were no reported exceedances of NEPM (2013) HIL-B for any metals at any of the other nine locations assessed.
- Carcinogenic PAHs (cPAH as BaP toxic equivalents (TEQ)) exceeded NEPM (2013) HIL-B of 4mg/kg in Fill at two locations (BH2-0.5m, 4.8mg/kg; BH3-0.5m, 5.8mg/kg).
- Total PAHs did not exceed NEPM (2013) HIL-B of 400mg/kg in any soil sample.
- BaP exceeded the NEPM (2013) environmental screening level (ESL) of 0.7mg/kg in Fill at three locations (BH2-0.5m, 3.5mg/kg; BH3-0.5m, 4.3mg/kg; BH5-0.5m, 3.7mg/kg).
- No BTEX compounds or TPH (C_6-C_9) was reported in any sample, including boreholes BH5 and BH6 which were near the reported location of USTs.
- TPH (C_{15}-C_{28}) (which is approximately equivalent to NEPM (2013) TRH-F3) was reported marginally above the laboratory limit of reporting (LOR) at two locations (BH2-0.5m, BH3-0.5m). Reported petroleum hydrocarbons of chainlength greater than C_{10} (i.e. TRH-F2, -F3, -F4) were generally negligible in fill and natural soil.
- No OCPs, OPPs, PCBs or phenol were reported in any soil samples collected.
- No asbestos was reported in any soil sample.

TCLP assessment of fill samples reported some leaching potential of lead and mercury. However the test was aggressive, and TCLP1 criteria was satisfied according to NSW DECCW (2009) Waste Classification Guidelines and the fill was provisionally classified as General Solid Waste (Non-Putrescible).

Sampling and Analysis – Groundwater

Samples of groundwater were collected from two monitoring wells identified as GW4 and GW5. Well GW5 was near the reported location of USTs.

Groundwater samples were analysed for

- Metals (As, Cd, Cr, Cu, Pb, Hg, Ni, Zn), TPH, BTEX, volatile organic compounds (VOCs), PAHs (including BaP), OCPs, OPPs, PCBs, Phenols.
- Water hardness (as mg/L $CaCO_3$) was also determined.

Results were assessed against ANZECC (2000) Water Quality Guidelines for Freshwater Aquatic Systems (95% level of protection). These have been called up in the NEPM (2013) amendment as groundwater investigation levels (GILs).

Review of the groundwater data reported by DP (July 2010) indicated the following:

- Copper, lead and zinc exceeded NEPM (2013) Freshwater GILs. However there was no exceedance of the hardness adjusted levels.
- There was no separated phase (liquid) material reported during groundwater sampling.
- No BTEX compounds TPH (C_6-C_9) or TPH (C_{10}-C_{36}) were reported in any groundwater sample.
- No PAHs (including BaP), OCPs, OPPs, PCBs or phenols were reported in any groundwater sample.

Conclusions

On basis of the information provided in the report of Douglas Partners (DP, July 2010), and under an amended land use scenario of high density residential (NEPM (2013) HIL/HSL-B), EI concludes the following:

- The site was predominantly used for manufacturing (newsprint) and car parking. The car parking areas were formerly residential dwellings which were progressively demolished.
- At least four USTs were located on site. DP (July 2010) reported that these had been removed. One flammable goods store was present on site; this was not reported on WorkCover records after 1996.
- The subsurface at the site comprised compacted road-base and sand/clayey sand fill to a depth of around 1.75mBGL, overlying natural soil of alluvium (sand, sandy clay and clay), and residual soil (silty clay and shaley clay). Bedrock (laminite/siltstone) occurred at a depth of around 9m to 13mBGL.
- Groundwater (water bearing zone) was reported at a depth of around 3.5m to 6m BGL.
- Contaminants of concern exceeding health-based criteria (NEPM (2013) HIL-B) were reported in fill. These were carcinogenic PAHs (as BaP TEQ) at two of 10 locations, and lead (Pb) at one of 10 locations.
- There were no exceedances of environmental criteria in groundwater after adjustment for hardness.

- If site soil was to be excavated and removed as part of redevelopment, Fill was provisionally classified as General Solid Waste (Non-Putrescible). Underlying natural soil was provisionally classified as virgin excavated natural material (VENM)

Environmental status in relation to the Current planning proposal

It is considered that the site can be made suitable for the proposed mixed use development including high density residential land use.

LIMITATIONS

The findings presented in this letter report are the result of previous investigations conducted by other environmental consultants with discrete and specific sampling methodologies used in accordance with best industry practices and standards.

While normal assessments of data reliability have been made, EI assumes no responsibility or liability for errors in any data obtained from previous investigations, regulatory agencies (eg. council, DECC, etc.), statements from sources outside of EI, or developments resulting from situations outside the scope of works of this letter report.

Despite all reasonable care and diligence, the ground conditions encountered and concentrations of contaminants measured may not be representative of conditions across the site. In addition, groundwater characteristics may change at any time in response to variations in natural conditions, chemical reactions and other events, e.g. groundwater movement and or spillages of contaminating substances. These changes may occur subsequent to EI's investigations and assessment.

This letter report was prepared by EI for the sole use of the above named client, no responsibility is accepted for use of any part of this report in any other context or for any other purpose or by other third parties. This report does not purport to provide legal advice.

Should you have any queries regarding this letter, please do not hesitate to contact the undersigned.

For and on behalf of,
ENVIRONMENTAL INVESTIGATIONS

GREG BRICKLE
Principal Environmental Scientist

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