

**Thinc Health**  
**Level 3, 8 Spring Street**  
**Sydney NSW 2000**

Project 72505.03  
29 January 2013  
NSA:jlb

Attention: Mary Jordan

Email: BMacky@thinc.com.au

Dear Madam

**Status of Contamination Assessment Works**  
**Site of the Neulene Comprehensive Cancer Centre and Australian Advanced**  
**Treatment Centre,**  
**Prince of Wales Hospital, Corner of Avoca and High Streets, Randwick**

## 1. Introduction

Douglas Partners Pty Ltd (DP) has prepared this letter for Health Infrastructure (HI) to provide information on the contamination assessments completed at the above site, and based on the above, to provide an opinion on the contamination status of the site of the Stage 2 works. It is understood that this letter and the previous contamination assessment reports will be submitted to the NSW Department of Planning and Infrastructure (DoPI) as part of the Development Application (DA) for the Stage 2 works.

## 2. Background

The overall Nelune Comprehensive Cancer Centre and Australian Advanced Treatment Centre [NCCC & AATC] site covers an area of approximately 4000m<sup>2</sup> (0.4ha). The NCCC & AATC project will comprise construction of a cancer and blood disorder treatment centre. The NCCC & AATC project has been divided into two stages namely:

- Stage 1 - The site of the Stage 1 works covers an area of approximately 2000 m<sup>2</sup>. The ongoing Stage 1 works comprises the bulk excavation of an existing carpark to allow for two basement levels wherein new bunkers, an underground tunnel corridor connecting to the existing Radiotherapy and Oncology Building and an open fire stair at the north-eastern corner of the site will be constructed; and
- Stage 2 - The site of the Stage 2 works covers an area of approximately 2000 m<sup>2</sup> and is currently occupied by an operational Radiation and Oncology Building and the Medical Superintendent's Cottage (MSC) that is currently occupied. The Stage 2 works will comprise the demolition of the existing Radiation and Oncology building and the construction of the remainder of the NCCC & AATC building. The MSC will be retained and adaptively reused

The boundaries of the overall NCCC & AATC, Stage 1 and Stage 2 sites are shown in Drawing 1 (attached).

### 3. Previous Contamination Assessments at the NCCC & AATC Site

DP has previously undertaken the following contamination assessments at the NCCC & AATC site:

- *Phase 1 Contamination Assessment with Limited Sampling, Comprehensive Cancer and Blood Disorder Centre, Prince of Wales Hospital, Randwick* (DP 2011), DP reference: 72505.01, dated September 2011); and
- *Detailed Contamination Assessment, Site of Stage 1 Works, Comprehensive Cancer and Blood Disorder Centre, Prince of Wales Hospital, Randwick* (DP 2012), DP reference: 72505.03, dated September 2012).

#### 3.1 DP 2011 Contamination Assessment

The assessment focussed on the overall Stage 1 and Stage 2 NCCC & AATC site and comprised a site history review, limited intrusive soil sampling from five test bores and groundwater sampling from three groundwater monitoring wells. Of the five bores, two (including one groundwater monitoring well) were located within the site of the Stage 2 works, and the remainder were located within the site of the Stage 1 works. In this regard, the DP 2011 assessment achieved 45% of the NSW EPA's minimum recommended sampling density (in accordance NSW EPA's publication *Sampling Design Guidelines* (1995)) for a site of 0.4 ha (i.e., 11 sampling locations). Given the operational status of the site, the reduced sampling density and staged approach to the assessment (which is in accordance with SEPP55) was considered appropriate.

Field observations at all sampling locations indicated the presence of shallow fill to a maximum depth of 0.5 m bgl underlain by natural sands, clays and sandstone. The analytical results for the soil samples showed that the concentrations of heavy metals, total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene and xylene (BTEX), polychlorinated biphenyls (PCB), organochlorine pesticides (OCP) and phenols were generally low and well within the threshold criteria for a commercial/industrial land use. With regard to polycyclic aromatic hydrocarbons (PAH), whilst a slightly elevated benzo(a)pyrene (B(a)P) concentration was recorded in one sample that was collected from a bore (BH1) within the Stage 1 site, the detected concentration was nevertheless, well within the threshold criterion for a commercial land use (5 mg/kg).

The analytical results for the groundwater assessment at the overall NCCC & AATC site showed that the majority of the samples recorded results below the laboratory's limit of reporting and were generally within the adopted groundwater investigation levels (GIL) for the protection of 95% of marine species. Whilst marginal exceedances of arsenic, copper, lead and zinc were recorded in two wells, the detected exceedances were attributed to 'background' quality of the groundwater. Further, an initial exceedance of TPH C<sub>6</sub>-C<sub>9</sub> was encountered at BH4 (located within the Stage 2 site) during the first round of sampling but not during the second round. Based on the results and noting the absence of potential sources, the detected TPH C<sub>6</sub>-C<sub>9</sub> exceedance was considered to be a transient anomaly.

Given the contaminant concentrations in the soil and groundwater samples, the DP 2011 report concluded that from a contamination perspective, the overall NCCC & AATC site was a low risk site. Further, the site was generally considered to be environmentally suitable for continued hospital use. However, given the limited nature of the investigation undertaken, the following recommendations were provided for due diligence purposes:

- Any filling or natural soils / bedrock requiring removal from the site must be initially waste classified in accordance with the NSW *Waste Classification Guidelines* (2009). This should preferably be completed *ex situ*;
- A hazardous materials inspection should be carried out on the buildings to be demolished and/or renovated as part of the project;
- Upon demolition of the existing buildings, an inspection of the ground surface should be carried out by a qualified occupational hygienist or environmental consultant to assess the potential for asbestos contamination; and
- It appears based on the second round of testing that the initial TPH C<sub>6</sub>-C<sub>9</sub> exceedance was an isolated result (an anomaly). The exceedance may have been due to a transient off site source.

### 3.2 DP 2012 Contamination Assessment

The assessment was undertaken to supplement data from the DP 2011 assessment such that the sampling density at the site of the Stage 1 works met the NSW EPA's minimum recommended sampling density. It comprised soil sampling from four supplementary test bores that were placed within Stage 1 site. In this regard, it is noted that the Stage 1 site is located within the boundaries of the overall NCCC & AATC site. Therefore, given the supplementary works, the sampling density at the overall NCCC & AATC site has increased to in excess of 80% of the NSW EPA's minimum recommended sampling density for a site of 0.4 ha.

Similar to the findings of the DP 2011 assessment, the field observations indicated the presence of shallow fill to a maximum depth of 0.7m bgl. The analytical results of the soil samples also indicated that the concentration of heavy metals, TPH/BTEX, PAH, PCB, OCP, OPP and phenols in all analysed samples were generally low and well within the adopted threshold criteria for a commercial land use. Further, asbestos or respirable asbestos fibres were below the laboratory's limit of reporting in the analysed soil samples.

Based on the results of the assessment, the DP 2012 report concluded that similar to the findings of the DP 2011 assessment, the Stage 1 site was a low risk site from a contamination perspective, and that the site was suitable for the proposed commercial (hospital) land use.

## 4. Site of Stage 2 Works

As detailed in Section 3:

- As a result of the previous DP investigations, a sampling density of in excess of 80% of the NSW EPA's minimum recommended sampling density has been achieved at the overall NCCC & AATC site (which includes the site of the Stage 2 works);
- As part of the DP 2011 assessment, two sampling locations (including one groundwater monitoring well) were placed within the Stage 2 site. Therefore, data pertaining to Stage 2 site albeit limited has already been obtained;
- Based the field observations during the DP 2011 and DP 2012 assessments, it is anticipated that the amount of fill at the Stage 2 site will be limited (maximum depth of 0.7m bgl); and

- The analytical results of the DP 2011 and 2012 assessments have shown that the contaminant concentrations in soil and groundwater at the overall NCCC & AATC site and the Stage 1 site have been consistently low and within the adopted threshold criteria for a commercial land use. As a result, the overall NCCC & AATC site is also considered to be a relatively low risk site from a contamination perspective.

In view of the above and given that the Stage 2 site is located within the boundaries of the overall NCCC & AATC site, DP is of the opinion that the site of the Stage 2 works is also a low risk site from a contamination perspective. Further, given that the majority of the Stage 2 site is occupied by operational buildings, intrusive sampling within building footprints is not considered practical at this stage. Irrespective of the potential for intrusive sampling, based on the results of the previous assessments, DP anticipates that the potential for contamination in the Stage 2 building footprints would be relatively low. Nevertheless, as a conservative approach DP recommends that after demolition of the existing buildings at the Stage 2 site, an inspection of the ground surface should be carried out by a qualified environmental consultant to assess the potential for contamination and the need (if any) for further intrusive sampling. If signs of contamination (such as odours, staining or asbestos containing materials) are observed after demolition, then further assessment may be warranted.

Please do not hesitate to contact the undersigned should you require additional information at this stage.

Yours faithfully  
**Douglas Partners Pty Ltd**

**Nizam Ahamed**  
Associate

**Paul Gorman**  
Senior Associate

Attachment: Drawing 1