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Health Infrastructure NSW  
C/- Dimitra Rousounidou  
Project Manager  
TSA  
Via email: [dimitra.rousounidou@tsamgt.com](mailto:dimitra.rousounidou@tsamgt.com)

**L05: Detailed Site Investigation Summary of Works, Ryde Hospital Redevelopment (Concept and Stage 1), Denistone Road, Denistone NSW**

Dear Dimitra,

**1. Introduction & Background**

JBS&G Australia Pty Ltd (JBS&G) was engaged by Health Infrastructure NSW (HI, the client), care of TSA, to undertake a combined Preliminary Site Investigation (PSI) and Detailed Site Investigation (DSI) of the structures associated with the proposed Ryde Hospital Stage 1 Redevelopment, located at Denistone Road, Denistone, NSW (the site).

The Ryde Hospital site is located at 1 Denistone Road, Denistone and comprises Lots 10-11 DP 1183279 and Lots A-B DP 323458. It has an area of approximately 7.69 Ha and currently accommodates the existing Ryde Hospital Campus.

This report accompanies a State Significant Development Application (SSDA) that seeks approval for the establishment of a maximum building envelope and gross floor area for the future new hospital buildings, and physical Stage 1 Early Works to prepare the site for the future development. For a detailed project description refer to the Environmental Impact Statement prepared by Ethos Urban.

The letter was developed to address Item 15 in Issue and Assessment Requirements – Concept Proposal of the Secretary’s Environmental Assessment Requirements (SEARs) for the SSDA (SSD-36778089) for the project. The SEARs requirement is described in **Table 1.1** below.

**Table 1.1: Contamination Scope**

Key Issue	Requirement	Relevant Section of Report
15. Contamination and Remediation	In accordance with SEPP55, assess and quantify any soil and groundwater contamination and demonstrate that the site is suitable (or will be suitable, after remediation) for the development.	Whole report

It is noted that State Environmental Planning Policy 55 – Remediation of Land (SEPP55) has been repealed and the former provisions consolidated into State Environmental Planning Policy (Hazards and Resilience) 2021 (Hazards and Resilience SEPP).

This cover letter was requested by the client to support the Concept and Stage 1 SSDA submissions. The letter provides a summary of works completed at the site and advice in relation to the status of inground contamination to assist the client with the design phase of the project.

This report should be read in its entirety including all associated attachments, including the Limitations provided as **Attachment 1**.

## 2. Summary of Works

JBS&G was engaged by HI to conduct a combined PSI and DSI (JBS&G 2019<sup>1</sup>) of the proposed Ryde Hospital Redevelopment, located on Denistone Road, Denistone, NSW 2122 (the site).

The bushland in the south-western portion of Lot 11 was not included within the definition of the site for the purposes of the PSI/DSI. Adjacent health related facilities, including Strata Plan (SP) 54777, SP20380 and Lots 1, 2 and 11 in DP7997 were also not included as part of the site.

It was understood that the client is seeking to redevelop the site for ongoing health services facility land use. The combined PSI/DSI was required to characterise potential contamination at the site in accordance with the requirements of SEPP 55 (as enforce at that time) and to draw conclusions regarding the suitability of the site for the proposed health services facility land use or make recommendations to enable such conclusions for the site.

The scope of works for the investigation comprised a review of available site history, previous investigation reports and publicly available information to identify potential areas of environmental concern (AECs) and associated contaminants of potential concern (COPC), soil and groundwater sampling, analysis of selected samples for identified COPCs, comparison of collected data against relevant EPA endorsed criteria, preparation of a DSI report in general accordance with relevant EPA endorsed guidelines, from a site contamination perspective, for the proposed redevelopment equivalent to a scenario of high-density residential land use.

The site investigation works comprised a detailed site inspection and advancement of 55 locations across the site and converted 4 locations into monitoring wells, from which selected samples were submitted for laboratory analysis to sufficiently characterise site conditions.

Based on the scope of work completed the following summarises the investigation findings:

- The site is understood to have been used as a health care facility since 1934. Prior to 1934, the site consisted of the Denistone House residential estate (originally built in 1806) which was subsequently purchased in 1913 as a convalescent home for men before subsequently becoming the maternity wing of Ryde Hospital in 1934.
- The review of historical site use information and inspection of site conditions identified potential AECs and associated COPCs, which were associated with potential importation of fill materials from unknown origins, historical fly tipping activities and hazardous materials associated with historical demolition, refurbishment and construction works. Anecdotal evidence indicates that historical dumping of waste materials, including asbestos, has occurred to the south of the engineering building. An underground storage tank (UST) (20,000L) and aboveground storage tank (AST) (2,000L) are understood to have been present at the site. The location of these tanks is currently unknown and requires further assessment.
- Several types of fill materials were encountered across the site, ranging in depth from 0.2 to 3.8 m. Fill depths were greater within the southern portion of the site, indicating potential filling activities within the southern portion of the site. Anthropogenic inclusions of terracotta, brick, tiles, asphalt, concrete, blue metal gravels, road base aggregate, sandstone gravels, organics (roots) traces of glass and tile were observed. The relative quantity of these

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<sup>1</sup> *Detailed Site Investigation, Ryde Hospital, Denistone Road, Denistone NSW, JBS&G, 56228/123127, 26 November 2019 (JBS&G 2019).*

inclusions in fill are such that they are not considered to pose an unacceptable aesthetic issue for the proposed land use, particularly given that the site surface across the proposed redevelopment will be finished with imported landscaping materials including soil and grass/shrubs/trees etc, new carpark hardstands and new buildings.

- Asbestos was identified in bonded and friable form in the southern portion of the site near the engineering building and in the area to the south of the engineering building where fill including asbestos is understood to have historically been dumped (anecdotal evidence). Field asbestos quantification (AQ) results identified asbestos containing material (ACM) exceeding the adopted health screening level high density residential (HSL-B) criteria within TP04 with an estimated ACM concentration of 0.0587 % w/w. Laboratory analysis identified asbestos fines / fibrous asbestos (AF/FA) concentrations above the adopted HSL-B criteria with an estimated AF/FA concentration of 0.0036 % w/w. To this extent, asbestos in soil in the southern portion of the site is considered to pose a potentially unacceptable risk to future site receptors and requires remediation or management.
- Likewise, the asbestos identified below buildings 12 and 18 during the hazardous material survey (HMS), whilst not investigated from a contaminated land perspective, is considered to pose a potentially unacceptable risk to future site receptors due to the presence of friable asbestos and therefore require remediation or management. JBS&G has not yet investigated the subfloor voids of the remaining buildings at the site. It is understood these investigations will occur during the next stage of the HMS investigations.
- ACM was identified within field AQ sampling at TP04 and BH26, below the site adopted HSL-B criterion for ACM. Concentrations of asbestos (in bonded and friable form) at all other sample locations across the remainder of the accessible areas at the site (outside of building footprints), were reported below the adopted site criteria. However, based on the age of the facility and various demolition/refurbishment works at the hospital involving potential asbestos building materials, JBS&G consider there to be the potential for additional asbestos to be identified during earthworks at the site. Isolated fragments of bonded ACM, whilst not a concern from a long-term health exposure (contaminated land) assessment perspective, will require management from a work health and safety (WHS) perspective during future activities that may result in ground disturbance in this area of the site and as such conditions should be noted on a site Asbestos Register.
- A range of heavy metals exceeded the generic ecological investigation levels, however, these were not considered to pose a potentially unacceptable ecological risk. Lead was reported in one sample with a concentration as exceeding the adopted health investigation level (HIL) criterion. Statistical analyses for the lead data set have indicated that the lead exceedance was not statistically significant with regard to the population data set. Therefore, the exceedances are not considered to pose an unacceptable human health risk that requires management or remediation.
- Total polychlorinated biphenyls (PCBs) (from Aroclor 1254) was reported in one sample (BH12-1.0-1.1m) as exceeding the adopted HIL criterion and requires management. Considering this exceedance is greater than 250 % of the site assessment criteria, this exceedance does not comply with the requirements for the use of statistical analysis. The source of the PCB impact is unknown, however, there were no known sources identified during the site inspection and sampling event that would indicate PCB contaminating activities by the hospital use. In addition, the PCB concentrations within the overlying sandy gravelly clay fill were below the laboratory detection limits. As a result, the elevated PCB concentration within the base of the fill material is likely a result of historical contaminated fill importation and levelling activities and requires delineation and localised management.

- Concentrations of other COPCs in soil samples analysed were reported below the site health and ecological assessment criteria, or have been considered not to pose a potentially unacceptable human health or ecological risk.
- Concentrations of COPCs in groundwater sample locations were less than the site assessment criteria with exception of a range of heavy metals. It is considered that the heavy metal concentrations are representative of a combination of regional background geo-chemistry and minor influences of the surrounding urban environment rather than specific point sources of contamination. Therefore, it is considered that the elevated cadmium, nickel and zinc concentration in groundwater do not pose an unacceptable risk that requires remediation or management.
- No soil background issues or chemical mixtures, significant aesthetic issues (outside of the identified asbestos in soils) or significant offsite migration risks were identified. Asbestos impacted soils at the southern boundary of the site may extend offsite into Health-owned land south of the site, however, this has not been confirmed as investigations did not extend into the adjacent bushland. In addition, the ground surface of the bushland was unable to be inspected due to overgrown vegetation.
- On this basis, it is considered that subject to further investigation of the identified data gaps and development and implementation of a Remedial Action Plan (RAP) and Asbestos Management Plan (AMP) during future redevelopment works, the site can be made suitable for the proposed development and ongoing hospital land use.

Based on the results of the investigation, the following recommendations were made:

- Further investigation on the nature and extent of asbestos in soils within building subfloor cavities across the site is required;
- Further investigation on the nature and extent of asbestos impacted fill and the detailed extent of the proposed redevelopment works behind the engineering building is required;
- Further investigation on the location and potential contamination status of the UST and AST is required;
- The existing hospital AMP and asbestos register should be updated to reflect the findings of this investigation;
- Further investigation of soils beneath building footprints across the Stage 1 Early Works area is required following demolition to confirm the findings from the soil investigation as part of the DSI are consistent with the soils beneath the building footprints proposed for demolition;
- Subsequent to the additional investigations, a RAP should be prepared and implemented in accordance with the relevant regulatory requirements that documents the procedures and standards to be followed in order to address the identified asbestos and other isolated soil contamination impacts in such a manner as to make the site suitable for the proposed future uses;
- A Long Term Asbestos Management Plan (LTAMP) should be prepared if the management strategy for the identified asbestos impact includes on-site containment, such as the placement of a marker and capping layer to address the long term site maintenance of the remedial strategy. If other contamination impacts (e.g. PCBs) are retained on site these may require management via a long term contamination management plan (LTCMP); and
- A redevelopment specific AMP should be prepared prior to redevelopment to document controls required for the management of asbestos in soil impacts at the site.

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Should you require clarification, please contact Mitchell Hodgins on 02 8245 0300 or by email [mhodgins@jbsg.com.au](mailto:mhodgins@jbsg.com.au).

Yours sincerely:



Mitchell Hodgins  
Associate  
**JBS&G Australia Pty Ltd**

Attachments:

(1) Limitations

## **Attachment 1 – Limitations**

This report has been prepared for use by the client who has commissioned the works in accordance with the project brief only, and has been based in part on information obtained from the client and other parties. JBS&G accepts no liability for incomplete or inaccurate information provided to JBS&G by the client or other parties.

The advice herein relates only to this project and all results conclusions and recommendations made should be reviewed by a competent person with experience in the type of assessment works being reviewed, and should not be used for any other purpose beyond which it was intended.

JBS&G accepts no liability for use or interpretation by any person or body other than the client who commissioned the works. This report should not be reproduced in part or without prior approval by the client, or amended in any way without prior approval by JBS&G, and should not be relied upon by other parties except at their sole risk after making their own enquiries.

Conclusions arising from the review and assessment of data are based on the scope of work considered appropriate based on the regulatory requirements and relevant codes of practice. Within the limitations of the scope of services, the work reported herein has been performed in a professional manner in accordance with generally accepted industry standards and using a degree of skill and care ordinarily exercised by members of its profession.

No sampling or laboratory analyses were undertaken as part of the investigations undertaken, as described herein, which was limited to inspection of visible and accessible ground surfaces only in the designated area.

Changes to the surface conditions may occur subsequent to the investigations described herein, through natural processes such as rain, surface water runoff and wind, through the intentional or accidental disturbance of ground surfaces such as vehicle and pedestrian movement, excavation or failure of sediment and erosion controls, and/or through addition of materials/contaminants. The conclusions and recommendations reached in this report are based on the information obtained at the time of the investigations.

This report does not provide a complete assessment of the status of the site, and it is limited to the scope defined herein. Should additional information become available regarding conditions at the site, JBS&G reserves the right to review the report in the context of the additional information. This may require JBS&G undertaking further inspection, and possible sampling, analysis and reporting to verify additional information. Such additional works will only be completed following mutual written agreement between JBS&G and the client.