JBS&G 52063-108570
L005 (Response to EPA Comments of Landfill Gas SOPA Site 53 - Rev A)

4 May 2017

Lachlan McDougall
Mirvac
Via email: lachlan.mcdougall@mirvac.com

Response to EPA Comments regarding Landfill Gas, SOPA Site 53, 2 Figtree Drive, Sydney Olympic Park, NSW

Dear Lachlan,

1. Introduction and Background

Mirvac Projects Pty Ltd (Mirvac, the 'client') engaged JBS&G Australia Pty Ltd (JBS&G) to provide environmental advice in relation to comments from the NSW Environment Protection Authority (EPA, 2017[1]) on a State Significant Development (SSD) Application (SSD 7662) for proposed redevelopment at Site 53, 2 Figtree Drive, Sydney Olympic Park, NSW (the 'site').

From review of EPA (2017), the EPA's main concern with respect to potential contaminated land issues and the proposed development, is that the site is located near the former Bicentennial Park Landfill and former Golf Driving Range Landfill, and there appears to be insufficient buffer area between the landfills and the site.

EPA (2017) recommends the following Conditions of Approval if the development is approved:

a. *A site auditor accredited by the EPA under the Contaminated Land Management Act 1997 must be engaged to review the adequacy of all investigation, remediation and management plans and actions for the proposed development. A Section A Site Audit Statement certifying the site is suitable for the proposed use must be provided to the consent authority before the occupancy certificate will be issued.*

b. *A post-construction Environmental Management Plan (EMP}, approved by the accredited site auditor, must be provided before the occupancy certificate will be issued. The EMP must prescribe procedures for the maintenance of the landfill gas venting/mitigation system, procedures for the periodic monitoring of landfill gas on the site, and contingency plans for unexpected finds and for unacceptable risks that are detected or encountered. The EMP must be legally enforceable.*

2. Responses to EPA (2017)

Responses to comments from EPA (2017) relating to environmental (site contamination) matters follow.

[1] Mixed Use Development at Site 53, 2 Figtree Drive, Sydney Olympic Park (SSD 7662). NSW Environment Protection Authority, DOC17/16964-40:PW, 31 March 2017 (EPA 2017)

2.1 Potential Landfill Gas Intrusion

Basement excavation of the proposed development is approximately 17 m below existing ground surface in the highest portion of the site. JBS&G understand that the proposed basement design incorporates a seepage collection and management system that includes sub-floor drainage to a collection point. Therefore, the basement excavation will be free draining and will result in lowering of groundwater levels outside the basement footprint. This lowering has the potential to result in higher potential for landfill gas migration due to the increased thickness of the unsaturated zone.

However, the potential for groundwater seepage is expected to be low (and therefore the extent of the increased unsaturated zone) based on a geotechnical investigation (DP, 2014[2]) which reported:

- "Regional groundwater table is expected to be below the bulk excavation level. However, some seepage through and along strata boundaries should be expected…"; and
- The presence of residual clays and saturated soils comprising laminite and shale. These geology are typically of low hydraulic conductivity and are expected to produce low seepage rates.

Review of average hydraulic conductivity (1.4×10^{-8} to 1.1×10^{-10} m/s) estimated from measurement of rising head in three wells by DP (2016[3]) indicates that bedrock beneath the site has very low hydraulic. This very low hydraulic conductivity indicates basement excavation/dewatering will have little impact on groundwater levels in the surrounding area. Therefore, there is unlikely to be significant change to the unsaturated zone/landfill gas migration at/adjacent to the site due to the development.

To address EPA concerns with respect to potential impacts on the site from landfill gas generated by landfills located to the south an assessment of landfill gas will be undertaken in accordance with NSW EPA Guidelines for the Assessment and Management of Sites Impacted by Hazardous Ground Gases (EPA 2012).

It is proposed that half hourly atmospheric pressure data for a two year period will be obtained from the Bureau of Meteorology for the Sydney Olympic Park weather station in order to estimate a worst-case meteorological scenario, defined in EPA (2012) as a fifth percentile three-hour pressure decrease rate based on a two-year data.

Continuous-monitoring equipment, such as a GasClam®, will be used to monitor gas concentrations in three wells to be installed along the southern boundary of the site. The monitoring equipment will be deployed to capture the effects of a potential worst-case meteorological scenario. A worst case scenario may not be captured in the monitoring period in which the monitoring equipment is deployed, however, it is considered that scenarios close to worse case would be sufficient to assess current ground gas conditions at the site. The proposed sampling would identify whether the site is anticipated to be a risk for potential landfill gas intrusion from nearby landfills.

Although the proposed sampling would enable an assessment of current site conditions additional monitoring will be required to assess potential changes to groundwater levels following basement excavation. Where observed changes indicate a significant change to levels additional landfill gas monitoring may be required.

[2]Report on Geotechnical Investigation, Proposed Site 53 Redevelopment, 2 Figtree Drive Sydney Olympic Park, August 2014, Douglas Partners (DP 2014)

[3] Report on Supplementary Geotechnical Investigation Proposed Site 53 Redevelopment 2 Figtree Drive, Sydney Olympic Park. Douglas Partners Pty Ltd, 73946.02/R.001DftA, 8 July 2016 (DP 2016)

2.2 Comments on Conditions of Development Approval

The recommendation of the EPA requiring that a post-construction EMP be issued prior to the occupancy certificate is unnecessary and pre-empts the results of a landfill gas assessment at the site. It is noted that the site has not been publicly listed/identified by EPA as being impacted by ground gases and therefore it is unclear why EPA would consider that a future development would require an EMP when the existing development doesn't.

The requirement for the issue of a site audit statement is sufficient to address the EPA's concerns regarding ground gas at the site. If ground gas is an issue then this will be identified during the site audit process and appropriate management plans would be required by the EPA accredited site auditor prior to issue of the statement.

Should you require clarification, please contact the undersigned on 02 8245 0300 or by email jdemartin@jbsg.com.au.

Yours sincerely:

John De Martin
Associate
JBS&G Australia Pty Ltd

Reviewed/Approved by:

Dr Greg Dasey
Principal Hydrogeologist
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.

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 environmental investigations, before being used for any other purpose.

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Sampling and chemical analysis of environmental media is based on appropriate guidance documents made and approved by the relevant regulatory authorities. Conclusions arising from the review and assessment of environmental data are based on the sampling and analysis considered appropriate based on the regulatory requirements.

Limited sampling and laboratory analyses were undertaken as part of the investigations undertaken, as described herein. Ground conditions between sampling locations and media may vary, and this should be considered when extrapolating between sampling points. Chemical analytes are based on the information detailed in the site history. Further chemicals or categories of chemicals may exist at the site, which were not identified in the site history and which may not be expected at the site.

Changes to the subsurface conditions may occur subsequent to the investigations described herein, through natural processes or through the intentional or accidental addition of 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 environmental status of the site, and it is limited to the scope defined herein. Should information become available regarding conditions at the site including previously unknown sources of contamination, JBS&G reserves the right to review the report in the context of the additional information.