prensa
property › environment › safety ›

Level 1
71 Longueville Road
Lane Cove NSW 2066
(02) 8968 2500

6th December 2024

Marko Neskoski

Besix Watpac

16 Kensington Street
Kogarah NSW 2217

Dear Marko,

Review of Environmental Factors (REF) at St George Hospital: Air Quality Assessment

1 Introduction

This St George Hospital – Air Quality Assessment has been prepared by Prensa on behalf of the Health Infrastructure NSW (the **Applicant**) to assess the potential environmental impacts that could arise from the refurbishment works at St George Hospital at 16 Kensington Street, Kogarah (the **site**).

This report has been prepared to assist Watpac in meeting the requirements of the REF Package needed for the approval of Stage 3 Redevelopment works at the Site. Specifically, Watpac has requested Prensa provide advice for any further assessments to be undertaken in order to satisfy the requirements for section 6.2.3 Air Quality & Energy, by providing an indication of air quality conditions at the Site, both prior and during the proposed future works.

The Air Quality component of the review will include the following:

- A desktop review of air quality and local environmental conditions at the Site; and
- A Letter of Advice summarising the findings and any recommendations related to the proposed works at the Site.

This report accompanies a Review of Environment Factors that seeks approval for the refurbishment of the existing St George Hospital, which involves the following works:

- Internal refurbishment works within existing hospital buildings.
    - Burt Nielson Wing Level 1 – Fluoroscopy
    - Burt Nielson Wing Level 2 – Paediatrics and CYF
    - Clinical Services Building & Services Block Ground Floor – Back of House
    - Ward Block Level 2 – Multi-faith, Patient Transit and AAU
    - Tower Ward Block Level 4 – Renal

  - Tower Ward Block Level 6 – Surgical
  - Prichard Wing Various Levels – Sexual Health, Antenatal and Gynaecology
  - Acute Services Building Level 7 – Palliative Care
- Minor extension for a new Clinical Waste building within the hospital campus and new covered walkways
- Services upgrade/ modification works & new services installations including but not limited to lighting, hydraulics, mechanical, fire and stormwater and drainage
- Demolition of existing buildings within the hospital campus and wider precinct
- Civil & Landscaping works adjacent to Belgrave Street for continuation of the Ambulatory Care main entry forecourt area

For a detailed project description, refer to the Review of Environmental Factors prepared by Ethos Urban.

1.1 Site Description

The St George Hospital is located on Kensington Street, Kogarah, within the Georges River Council Local Government Area (LGA) on Bidjigal Country. The hospital site is approximately 12 kilometres south of the Sydney CBD and has an area of approximately 5.16 hectares.

The hospital is located in a cluster of health and education uses within the Kogarah town centre. It comprises a number of buildings associated with the hospital campus situated around an internal road network.

St George Hospital is within proximity of transport services and key road links, including Kogarah Railway Station approximately 350 metres to the north of the site and Princes Highway to the east of the site. An aerial image of the site is shown at **Figure 1.**

Figure 1: Site Aerial

1.2 Statement of Significance

Based on the identification of potential issues, and an assessment of the nature and extent of the impacts of the proposed development, it is determined that:

- The extent and nature of potential impacts are moderate, and have the potential to result in significant adverse effects on the locality, community and the environment, however, enacting the mitigation measures raised in **Section 5** should suitably manage the impacts of development in regards to hazardous materials so that they are no longer significant.

1.3 REF Reporting Requirements

Table 1 below outlines REF deliverables and which section of the report they are addressed in:

Table 1: REF Deliverables

Item	REF Requirement	Relevant Section of Report
AQ001	Section 6.2.3 Air Quality and Energy The Works may result in dust generation, generation of odours, use of fuel-driven machinery, and are adjacent highly sensitive land uses.	Section 3 and Section 5 of this report.

2 Methodology

The Air Quality Assessment will involve a desktop review into multiple parameters relating to the nominated areas affected by the Stage 3 Redevelopment Works. This will include the following:

- Local existing environmental conditions;
- Impact of these local climate conditions on potential dust generating works; and
- Recommendations for the implementation of further controls or monitoring to reduce the impacts of the work on local air quality.

3 Findings

3.1 Existing Environmental Conditions

To characterise the local conditions at the Site, information collected from the Bureau of Meteorology (BoM) weather stations and The Department of Planning Industry and Environment (DPIE) air quality monitoring stations have been used.

The BoM weather stations located at Sydney Airport (066037) and Canterbury Racecourse (066194) record daily measurements of minimum and maximum temperature, and twice daily measurements of wind speed and wind direction at 9am and 3pm. This data has been collected since the stations opened in 1939, and has been collated into monthly averages for each parameter. Using this historical data as well as recent data gives a long term indication of the weather conditions at the Site.

The DPIE air quality and weather monitoring stations measure the following parameters:

- Wind speed;
- Wind direction;
- Temperature;

- Humidity;
- Particles ($PM_{2.5}$);
- Particles (PM_{10});
- Ozone;
- Nitrogen dioxide;
- Visibility;
- Carbon monoxide; and
- Sullfur dioxide.

These are measured on an hourly basis and presented in a week by week format. This data is stored from the most recent six months only. This data cannot provide any insight into the historical air quality conditions at the Site, but provides ongoing current updates on various parameters.

3.1.1 Meteorological Conditions

The BoM weather stations located within proximity of the Site include Sydney Airport and Canterbury Racecourse. Using data from all available years at each location, the following information may be relevant to the current Assessment:

- Temperatures follow seasonal variations, with warmest temperatures seen in January and coldest in July;
- Wind speeds throughout the year are generally consistent, however wind speed generally increases in the second half of the year, and tends to increase over the day; and
- Wind direction varies throughout the year, however trends south-easterly/easterly in the morning and south-westerly/westerly in the afternoon.

Additionally, the closest weather and air quality monitoring station operated by DPIE is located in Earlwood, approximately 10km from the Site. This monitors wind speed and wind direction hourly and presents it in a week by week view. Data collected from the 13th to the 15th November 2024 only, shows wind speed remained below 2.0 metres/second, while wind direction tended to be south-easterly.

3.1.2 Air Quality Conditions

Using data collected from the closest Air Quality Monitoring Stations operated by DPIE at Earlwood, Alexandria and Randwick, the hourly monitored values for each air quality parameter listed above remained below the set standards over the period from the 11th November 2024 to the 17th November 2024. When surveying weekly datasets from the past six months back to May 2024, occasional increased hourly measurements of $PM_{2.5}$ were recorded, however these were not consistent. Each other parameter generally remained below the associated guidelines.

3.1.3 Existing Emission Sources

There are several existing emission sources located in the vicinity of the Site that may affect air quality during the redevelopment works. These include:

- Princes Highway, a major transit route;
- The Eastern Suburbs & Illawarra Train Line; and
- Various construction projects, including the nearby works connecting Kogarah to the M8 on President Avenue, upgrades to the Princes Highway and President Avenue intersection, and upgrades to the nearby Netstrata Jubilee Stadium.

These sources may produce various pollutants including carbon dioxide, nitrogen oxides and carbon monoxide due to vehicle exhausts, plant and equipment. Dust may also be generated as a result of surrounding construction projects.

3.1.4 Likely Receptors

There are several receptors within the vicinity of the Site that may be impacted by emissions generated from the future works. These include:

- Staff and patients in areas of St George Hospital directly adjacent the redevelopment works, such as the Older Persons Inpatient Mental Health Services Building, the Cancer Care Centre, and St George Private Hospital;
- Staff and patients at Kogarah Private Hospital, located opposite the Site on Kensington Street;
- Staff at Kogarah Fire Station, located directly adjacent the Site on the corner of Kensington and Gray Streets;
- Staff and students at St Patrick's Catholic Primary School, located on Chapel Street;
- Staff and residents of St Patrick's Green Retirement Community and Aged Care, located on Chapel Street;
- Staff and students at Moorefield Girls High School and James Cook Boys Technology High School, located on Princes Highway;
- Residents in nearby streets; and
- The general public.

3.2 Impact of Redevelopment Works

The Stage 3 redevelopment works will likely have several impacts on the surrounding area and receptors identified in Section 5.1.4. Several of these have been outlined in the Construction Management Plan (CMP) and Environmental Management Plan (EMP) developed by Besix Watpac, and are detailed in the following sections.

3.2.1 Dust Generation

Dust generation will likely be the primary risk to air quality during redevelopment works, especially when combined with existing construction works in the vicinity. The sources of dust generation may include:

- Demolition of existing structures;
- Earthworks including excavation and landscaping;
- Construction; and
- Transport of materials/waste to and from the Site.

3.2.2 Emission and Odour Generation

Additionally, increased vehicle movements associated with the redevelopment works, specifically the transportation of materials and waste to and from the Site, will likely result in increased exhaust emissions. Use of engines and motors may also generate odours from smoke. Odours may also result from grinding, cutting or sanding operations.

4 Conclusion

This report was completed to assist Watpac in meeting the requirements of the REF Package needed for the approval of Stage 3 Redevelopment works at the Site. It assessed the existing air quality, as well as the potential impacts of the proposed works on air quality conditions.

Dust generation is the main factor that may impact air quality as a result of the proposed redevelopment works. This may be caused by demolition works, earthworks, construction activities and increased transportation. Considering the existing emission sources and sensitive receptors adjacent the Site, mitigation measures to reduce and monitor dust release may be implemented to help control air quality conditions.

Additionally, the redevelopment works may also generate emissions and odours, most likely from vehicle exhausts, however this will likely be negligible considering the existing emission sources and major roads surrounding the Site.

Several mitigation measures have been listed below to aid in the control of emissions if required. If enacted, these measures should should suitably manage the impacts of development in regards to hazardous materials so that they are no longer significant. These mitigation measures can supplement the existing CMP and EMP created by Besix Watpac.

5 Mitigation Measures

The CMP and EMP provided by Besix Watpac reference a range of mitigation measures, with a specific Air Quality (Dust) Management Plan, provided in the EMP. To supplement this and aid in the mitigation of potential dust generation associated with the redevelopment works, several control measures have been listed in this report:

- Plan site works so that dust generating machinery and activities are located away from likely receptors as far as reasonably practicable;
- Apply water suppression techniques during demolition, civil and landscape works and on any exposed areas/stockpiles to prevent dust release;
- Use cutting or grinding equipment with appropriate dust suppression and on-tool extraction techniques;
- Remove dust generating materials or waste from site as soon as possible, or cover with an impermeable material if required to be stored;
- Assess weather conditions and air quality prior to commencing dust generating activities on Site. If conditions are deemed unsuitable, reschedule works for a later time if possible;
- Carry out regular site inspections to record dust generating activities;
- Keep record of any complaints or incidents on Site relating to dust generation from other areas of the hospital, surrounding facilities, residents and the general public; and
- Conduct real time continuous dust monitoring in key areas such as adjacent fresh air intakes for HVAC systems servicing occupied hospital areas, high risk areas such as patient wards, and along pedestrian thoroughfares.

In relation to emission and odour generation, the following recommendations may be implemented:

- Maintain vehicles, plant and equipment in good working order ensuring regular servicing;
- Turn off all vehicles, plant and equipment when not in use;
- Impose speed limits and designated routes for vehicles on Site; and

- Consider weather conditions and wind direction prior to undertaking odour generating activities to point odours away from sensitive receptors.

Should you have any questions regarding this report, please do not hesitate to contact the undersigned on (02) 8968 2500.

Yours sincerely,

Madeline McGarvey

Associate HSE Consultant

Prensa Pty Ltd

Attachments

A – Statement of Limitations

B – Site Plan

Attachment A: Statement of Limitations

Statement of Limitations

This document has been prepared in response to specific instructions from Besix Watpac to whom the report has been addressed. The work has been undertaken with the usual care and thoroughness of the consulting profession. The work is based on generally accepted standards, practices of the time the work was undertaken. No other warranty, expressed or implied, is made as to the professional advice included in this report.

The report has been prepared for the use by Besix Watpac and the use of this report by other parties may lead to misinterpretation of the issues contained in this report. To avoid misuse of this report, Prensa advise that the report should only be relied upon by Besix Watpac and those parties expressly referred to in the introduction of the report. The report should not be separated or reproduced in part and Prensa should be retained to assist other professionals who may be affected by the issues addressed in this report to ensure the report is not misused in any way.

Prensa is not a professional quantity surveyor (QS) organisation. Any areas, volumes, tonnages or any other quantities noted in this report are indicative estimates only. The services of a professional QS organisation should be engaged if quantities are to be relied upon.

Sampling Risks

Prensa acknowledges that any scientifically designed sampling program cannot guarantee all sub-surface contamination will be detected. Sampling programs are designed based on known or suspected site conditions and the extent and nature of the sampling and analytical programs will be designed to achieve a level of confidence in the detection of known or suspected subsurface contamination. The sampling and analytical programs adopted will be those that maximises the probability of identifying contaminants. Besix Watpac must therefore accept a level of risk associated with the possible failure to detect certain sub-surface contamination where the sampling and analytical program misses such contamination. Prensa will detail the nature and extent of the sampling and analytical program used in the investigation in the investigation report provided.

Environmental site assessments identify actual subsurface conditions only at those points where samples are taken and when they are taken. Soil contamination can be expected to be non-homogeneous across the stratified soils where present on site, and the concentrations of contaminants may vary significantly within areas where contamination has occurred. In addition, the migration of contaminants through groundwater and soils may follow preferential pathways, such as areas of higher permeability, which may not be intersected by sampling events. Subsurface conditions including contaminant concentrations can also change over time. For this reason, the results should be regarded as representative only.

Besix Watpac recognises that sampling of subsurface conditions may result in some cross contamination. All care will be taken and the industry standards used to minimise the risk of such cross contamination occurring, however, Besix Watpac recognises this risk and waives any claims against Prensa and agrees to defend, indemnify and hold Prensa harmless from any claims or liability for injury or loss which may arise as a result of alleged cross contamination caused by sampling.

Reliance on Information Provided by Others

Prensa notes that where information has been provided by other parties in order for the works to be undertaken, Prensa cannot guarantee the accuracy or completeness of this information. Besix Watpac therefore waives any claim against the company and agrees to indemnify Prensa for any loss, claim or liability arising from inaccuracies or omissions in information provided to Prensa by third parties. No indications were found during our investigations that information contained in this report, as provided to Prensa, is false.

Recommendations for Further Study

The industry recognised methods used in undertaking the works may dictate a staged approach to specific investigations. The findings therefore of this report may represent preliminary findings in accordance with these industry recognised methodologies. In accordance with these methodologies, recommendations contained in this report may include a need for further investigation or analytical analysis. The decision to accept these recommendations and incur additional costs in doing so will be at the sole discretion of Besix Watpac and Prensa recognises that Besix Watpac will consider their specific needs and the business risks involved. Prensa does not accept any liability for losses incurred as a result of Besix Watpac not accepting the recommendations made within this report.

Attachment B – Site Plan

St George Hospital

St George Hospital Campus Map