# Concept Stormwater Management Report

## St George Hospital – Refurbishment REF

### Project Reference: 130507

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# 1. Executive Summary

A separate set of work to the new Acute Services Building facing Kensington Street Kogarah is the proposed internal refurbishment of existing buildings on the hospital campus and which are broadly defined in the Introduction.

This report addresses the stormwater strategy for 0.54 hectares of new landscaping in front of the Burt Neilsen Wing south of the ASB. It is landscaping which will replace existing permanent and demountable structures.

The St George Hospital – Refurbishment REF is seeking approval for a development without consent application under Part 5 of the Environmental Planning and Assessment Act 1979 (EP&A Act) and State Environmental Planning Policy (Transport and Infrastructure) 2021 (SEPP TI), which requires a Review of Environmental Factors (REF).

This report will document stormwater drainage strategy, environmental mitigation measures and requirements proposed for the site. This report will form part of REF (Review of Environmental Factors) submission to SINSW.

Health Infrastructure NSW (HI) is the applicant for the proposed St George Hospital at 16 Kensington Street, Kogarah within the Georges River Council Local Government Area (LGA).

This report accompanies a Review of Environment Factors that seeks approval for the construction and operation of a new Hospital at the site. For a detailed project description, refer to the Review of Environmental Factors prepared by Ethos Urban.
The Hospital seeks to deliver planting space surrounded by existing hospital buildings and the refurbishment of the existing St George Hospital respectively. The refurbishment of the buildings will be located along Belgrave Street and the works include entire planting space, grassed area, proposed ramp adjacent to existing loading dock.

# 2. Introduction

This Stormwater Management Report has been prepared by Meinhardt 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 outline the water quality and quantity measures within The Georges River Local Government Area (LGA).

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 refurbishments work within existing hospital buildings.
    - Burt Nielson Wing Level 2 Refurb – Paediatrics and CYF
    - CSB Ground Floor – Back of House
    - TWB Level 2 Refurb – Multi-faith, Patient Transit and AAU
    - TWB Level 4 – Renal
    - Prichard Wing – Sexual Health, Antenatal and Gynaecology
    - TWB Level 6 – Surgical
    - ASB Level 7 – Palliative Care
- Minor extension for a new Clinical Waste building within the hospital campus
- Services upgrade 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.

## 2.1 Site Description

The St George Hospital is located on Kensington Street, Kogarah, within the Georges River Council Local Government Area (LGA). 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

Source: Nearmap, edits by Ethos Urban

Not latest revision of REF map but maybe okay because this report only focuses on landscaping? EU to confirm

### 2.2 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 minor environmental impacts in terms of adequate stormwater management system with open grassed area and infiltration system through numerous subsoil drainage adjoining the existing loading dock near Belgrave Street, and will not have significant adverse effects on the locality, community and the environment;
- Potential impacts can be appropriately mitigated or managed to ensure that there is minimal effect on the locality, community.

## 3. REF Reporting Requirements

This report has been prepared in accordance with environmental mitigation measures and technical stormwater management plan to meet the Georges River Council requirements for the proposed development. The REF deliverable requirements are presented in Table 1.

| Item | REF Requirement | Relevant Section of Report |
|---|---|---|
| 1.0 | *Stormwater Management Plan* | *Section 4.0, 5.0 and 6.0 consider design solutions to mitigate environmental impacts and pollutant by infiltration system through subsoil drainage at the proposed garden bed* |

Table 1. Relevant REF Requirements

# 4. Stormwater Quantity Management

## 4.1 Stormwater Drainage Works

Stormwater works proposed consist of:

· A pit and pipe system within the site area to convey minor flows (in accordance with the Major/Minor stormwater strategy approach defined in Australian Rainfall and Runoff). There are a few existing drainage pits and pipes running toward the existing loading dock and most of the sheet flow at the proposed development area runs along the grassed zone near Belgrave Street.

· Overland flow paths are provided to cater for upstream catchments to convey major storm flows within the development area near the adjacent boundary lines along Belgrave Street and between Burt Nielsen Wing and the Security Office building.

The design criterion for below-ground pipe drainage has been adopted from Clause 3.2 of the Stormwater Management Policy and is listed as follows:

- Minor below ground drainage system 20-year ARI
- Major system 100-year ARI

The proposed stormwater adjustments are shown in Figure 2.

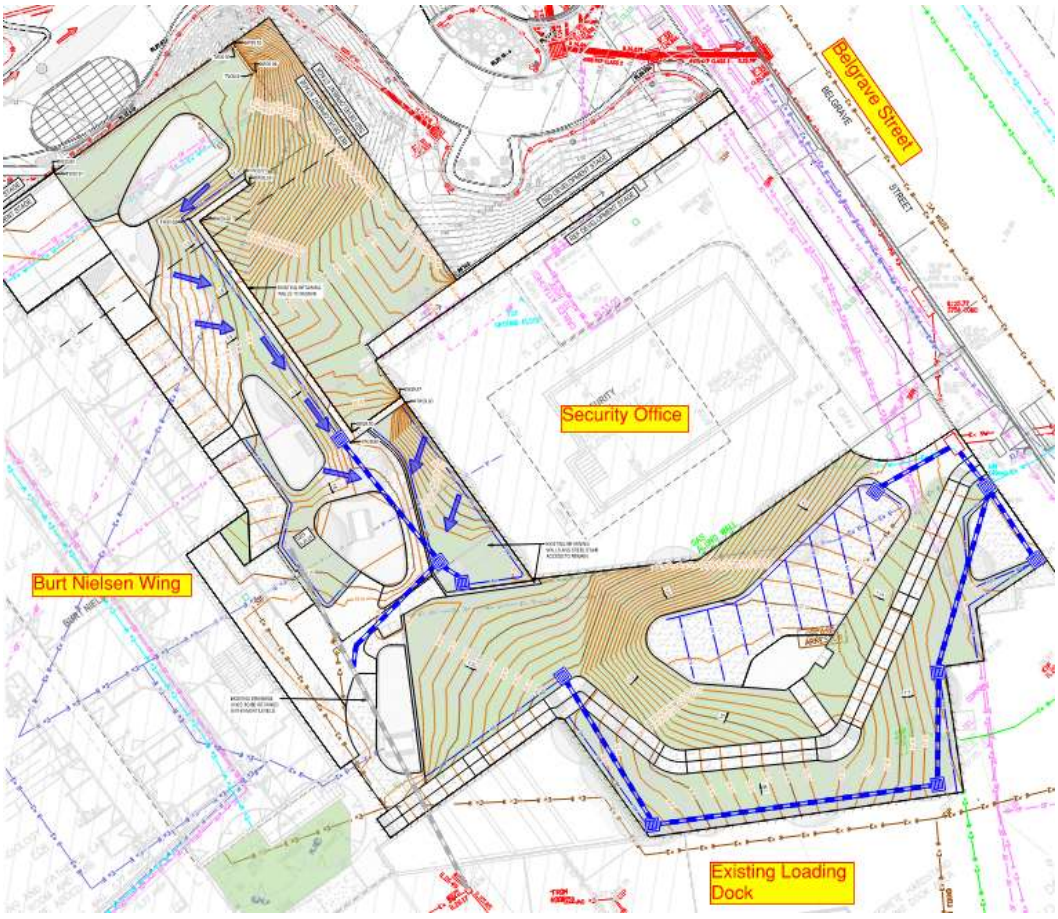


Figure 2. Stormwater System for Proposed Development

## 4.2 On Site Detention

Council requires the provision of an on-site detention system to ensure that new developments do not increase peak stormwater flows in any downstream area during major storms up to and including 100-year ARI events.

The Georges River Council “Storm Water Policy 2021” in table 3 sets out the steps in determining the applicable permissible site discharge (PSD) to the proposed development and the size of the OSD tanks to be required. The proposed landscaped area in front of the Burt Nielsen Wing replaces buildings and hardstand and 0% impervious area negates the need for OSD.

**Table 3 - Maximum Permissible Discharge (PSD) and Minimum Site Storage Requirements (SSR)**

| Site's Impervious Area Percentage upon completion of development (as calculated in accordance with Appendix A7) ** | Maximum Permissible Discharge (PSD) L/s/ha | Minimum Site Storage Requirements (SSR) $m^3$/ha |
|---|---|---|
| Less than 55% | OSD not required | |
| 55% to less than 65% | 182 | 206 |
| 65% to less than 75% | 166 | 240 |
| 75% to less than 85% | 152 | 270 |
| 85% or higher | 136 | 295 |

## 4.3 Catchment Plan

The proposed catchment plan for the site is presented in Figure 3 and further detailed in Appendix C. Two site’s catchments are comprised of the existing drainage system and the proposed drainage system with agricultural lines at the garden bed. Flows coming from the existing drainage between Burt Nielsen Wing and the Security Office will be conveyed through existing drainage pipes which will all discharge into the one of existing pits at the loading dock adjoining the proposed site and the rest of them will be carried along the open garden bed.

The total catchment area across the forecourt site is approximately 0.5400 hectares comprised of concrete ramps and landscaping surfaces. 75% of the total site area (0.403 hectares) is proposed to drain into the existing pit after the proposed infiltration system and proposed drainage pipes. This is comprised of existing and proposed drainage systems (yellow, and green hatches).


Figure 3. Site Catchment Plan

This is an extract from plan such and such included in Appendix C

# 5. Stormwater Quality Strategy

In order to meet Georges River Council's requirements for stormwater management, the water quality strategy will need to include treatment of the stormwater prior to discharge to the nominated point of connection, reducing water borne pollutants as per all relevant guidelines.

As there are more pervious areas to be developed at the proposed site, there are no significant environmental impacts and pollutant issues to be anticipated in comparison to pre-developed conditions However, as the works replace buildings and hardstand with grass and other landscaping, the impact will certainly be an improvement and clearly not require water quality measures hence, we do not consider water quality measures.

# 6. Sediment and erosion management

The site is to be provided with catch drains, sediment fence, inlet trap and filters.

The construction of a sediment basin may not be considered necessary during early works stage for sediment runoff in the minor storm event (6 months ARI and 1yr ARI) and the provision of a vegetated garden bed near Belgrave Street provides an area of sediment storage that will reduce likelihood of sediment runoff (See Figure 4 below). The contractor in determining the methodology of demolition and excavation will also develop and sediment and erosion control system addressing all measures such as the provision and maintenance of basins, silt fences and traps etc. during the construction phase.

Post construction, the garden beds are to be regularly inspected, maintained and cleaned after each rainfall event.


Figure 4. Sediment and erosion control

# 7. Construction Management

During the construction phase, the maintenance and monitoring of erosion and sediment control measures remain the responsibility of the project Contractor. Details of the inspection frequency expected will need to be noted within the Operational Environmental Management Plan (EMP). If during the construction phase of the development, it is deemed necessary, monitoring of the erosion and sediment control measures will be undertaken by a qualified consultant to determine the impact of construction activities on the subject site only. The works involve the replacement of an impervious site with a previous one and therefore potentially other than in the construction phase there will be no adverse environmental impacts.

- The Out of Hospital Hours Care proposed hours operational hours could be determined closer to date but can consider typical timings 6.30AM-9.00AM (Before regular working hour) and approved working hours
- The Out of Hospital Hours Care is Typically run by external/private providers

# 8. Conclusion

This report has been prepared to assess the potential environmental impacts that could arise from the refurbishment works at St George Hospital at 16 Kensington Street, Kogarah. Sediment & erosion control are adequately adopted throughout the site during early works and construction phase by sediment fences, inlet traps & filters and proper mitigation measures and inspection and maintenance work will be scheduled during off peak hours and approved work hours.
Therefore, there are no significant impacts on the approval of a Review of Environmental Factors.

# 9. Mitigation Measures

| **Project Stage** ***Design(D)*** ***Construction(C)*** ***Operation (O)*** | **Mitigation Measures** | **Relevant Section of Report** |
|---|---|---|
| C / O | *Sediment and erosion control – Sediment and erosion measures are not anticipated to significantly impact the site by mitigation of sediment fence, inlet traps & filters.* | *Section 6* |
| C | *All works will be scheduled in accordance with the following:*<br>• *Works to be scheduled talking into account approved works hours, any restrictions relevant to specific tolls / activities and respite periods etc.* | *Section 7* |

# 10. References


- AS/NZ 3500.3:2003 Stormwater Drainage
- Landscape plans by Site Image
- Georges River Council – Stormwater Management Policy 2021
- Watercom – *DRAINS Version 2023.07*

# Appendix A – Survey

# Appendix B – Landscape Plans

# Appendix C – Catchment Plan