

19 December 2022

Project/File: 300304375

Simon Wilkes

Waluya Pty Ltd
 c/o Urbis Pty Ltd
 5 Bridge Street
 PYMBLE NSW 207

Dear Simon,

Reference: 7A-11 Racecourse Road, 5-9 Faunce Street & 36 Young Street, West Gosford

Waluya Pty Ltd engaged Stantec to provide preliminary geotechnical and contamination advice for a proposed Bus Depot on Racecourse Road, West Gosford. At this stage of the project, intrusive investigations have not yet commenced. Therefore the information contained in this letter is based on publicly available information, previous project experience in this area and our knowledge of the requirements for the studies required to support the development at this site.

The subject site is at 7A-11 Racecourse Road, 5-9 Faunce Street and 36 Young Street, West Gosford and within Central Coast Local Government Area (LGA). It is included in the B6 zone and has a total area of approximately 2.5 hectares as shown in Figure 1.

Figure 1: Subject site and its environs



Source: Nearmap imagery as provided by Urbis

The proposed development comprises bus facilities to accommodate 95 buses, with associated servicing workshops, office administration and staff parking. The site is also being planned to transition across into the future to accommodate an electric bus fleet. The initial site concept plan is shown in Figure 2.

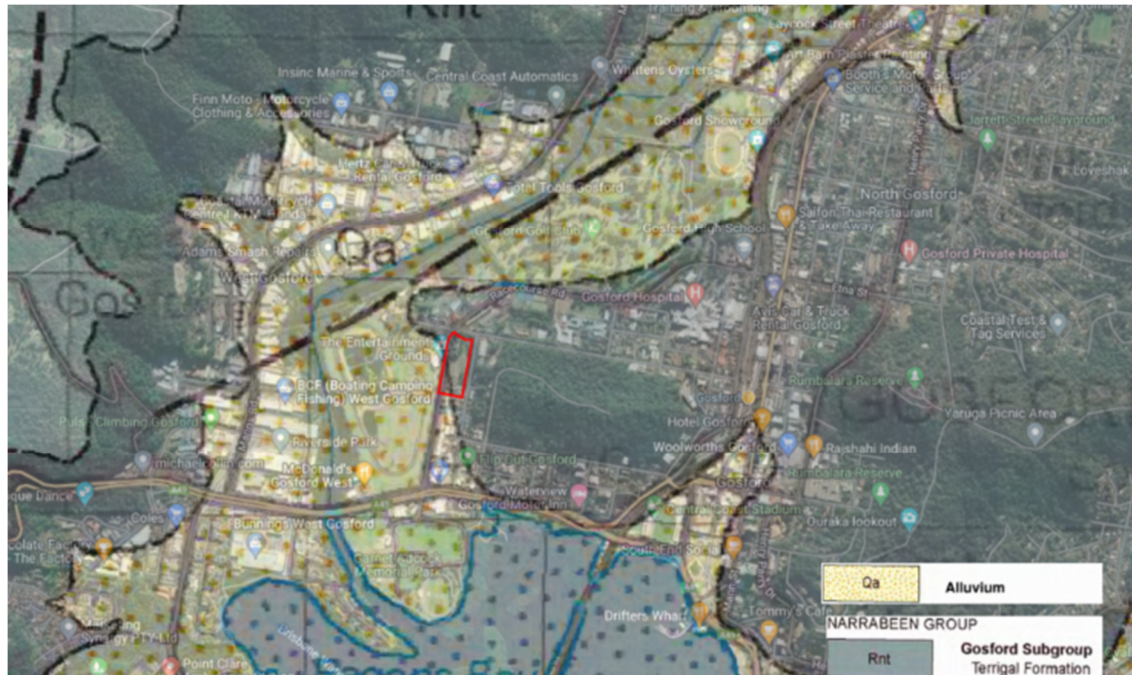
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Geology

Design with community in mind

Reference: 7A-11 Racecourse Road, 5-9 Faunce Street & 36 Young Street, West Gosford

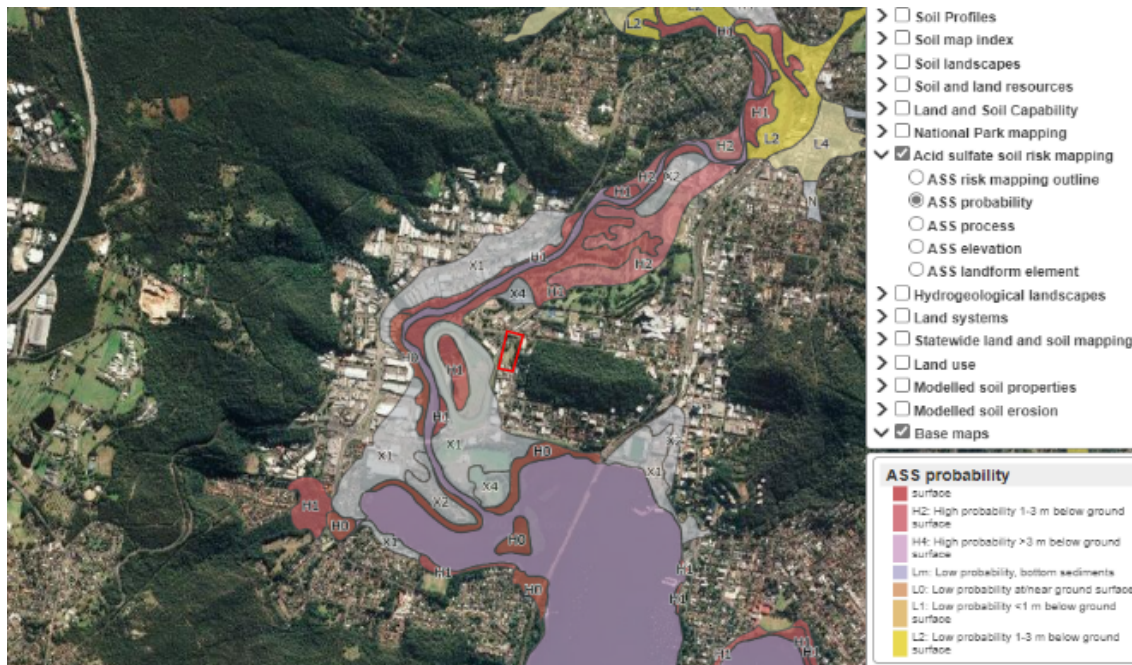
Figure 3: 1:100,000 Geological Map of Gosford Extract



Source: [AGSON - Australian Geological Survey Organisations Network \(geoscience.gov.au\)](https://www.geoscience.gov.au/)

The State Government of NSW Department of Planning website shows the site to be close to an area of mapped "High Probability <1m below ground surface" for Acid Sulfate Soil as shown in Figure 4.

Figure 4: Acid Sulfate Soil Risk Map Extract



Source: Copyright State Government of NSW and Department of Planning and Environment 2022

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Geotechnical Conditions

Stantec has undertaken previous geotechnical investigations in this area. Based on our knowledge of the ground conditions on sites nearby, we anticipate the following potential ground profiles:

Profile 1

Loose and loose through medium dense and dense clayey sands and gravels to 3m, underlain by thick residual soils comprising interbedded clays and sandy clays varying from firm through very stiff in consistency to 10m depth.

Profile 2

Thin alluvial soils comprising sandy clays of 1m-2m thickness overlying thick residual soils comprising interbedded clays and sandy clays varying from firm through very stiff in consistency to at least 10m depth.

For both profiles, it is possible that the bedrock level may be shallower than this along the eastern boundary of the site where the ground level rises up to Young Street.

Based on our high-level understanding of the geotechnical conditions potentially underlying this site, the following provisional recommendations are made which would be subject to confirmation following a comprehensive geotechnical investigation campaign.

- Pavements – The subgrade is expected to comprise clayey soils and therefore the subgrade properties are expected to be relatively poor. Preliminary pavement designs should consider CBR values of 3% which will be confirmed by comprehensive testing.
- Foundation – Dependant on the nature of the proposed buildings, it is likely that the structures will be founded on piles which will be designed to accommodate the vertical loadings. There may be a mix of foundation solutions for structures along the eastern boundary as it is possible that the bedrock rises closer to surface in this area. This will be investigated in detail during the geotechnical investigation.
- Cut batters – Cut batters, if required, will be formed in the alluvial or residual soils. Permanent batters should provisionally be designed with 2H:1V batters, however this will be subject to investigation and stability checks as part of the design development.
- Excavations - Excavations are likely to be readily achieved with conventional earthmoving equipment. Dependant on the levels selected for the site, bedrock may be encountered along the eastern boundary at shallow depths and excavation may require heavier plant.
- Groundwater – It is possible that groundwater seepages may be experienced on the upslope side of the site (Young Street) as this may reflect a perched groundwater table at the soil / rock interface. Cut-off drains may be required along the eastern boundary and parts of the northern boundary to intercept and divert groundwater seepages around the perimeter of the site.

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In order to inform the detailed design stage of the proposed development, a ground investigation will be completed and will comprise the following detailed scope:

i. Planning

In preparation for the fieldwork Stantec will:

- Draft a Works and Safe Work Method Statements (SWMS) to identify and control Environmental and Health and Safety (EHS) risks associated with the proposed fieldwork.
- 'Dial Before You Dig' underground services search and service clearance by ways of services scanning each location.
- Obtain permission to access the site to undertake the works.

ii. Fieldwork

- Provide a certified service locator to determine investigation locations clear of services. Where investigatory locations are within close proximity to services, they would be relocated to a safe working space. Service utilities clearance using electromagnetic detector will be carried out prior to field works. Works would only proceed once location is confirmed cleared and permits have been received.
- An experienced geotechnical engineer/geologist professional will manage the field investigation component of the work (working closely with our Contamination colleagues). The engineer will supervise, collect samples and complete a detailed log of the boreholes. The engineer will also undertake an assessment of the existing site conditions and take note of any anomalies encountered during investigation that could be of risk during future construction activities.
- Undertake targeted investigation boreholes and test pits at each nominated location comprising augerholes/ boreholes with the use of a track or truck mounted drill rig with solid flight auger using Tungsten Carbide (TC) bit for the upper soil profile followed by rock coring using NMLC techniques.
- Undertake SPTs at 1.5m C/C intervals through the upper soil profile.
- Collection of soil and rock samples to aid material classification and strength.
- Logging encountered subsurface conditions by and experienced Geotechnical Engineer in accordance with AS1726-Geotechnical Site Investigation.
- Backfilling and re-instating with excavated spoil.
- Laboratory Testing including Atterberg Limits with Linear Shrinkage, particle size distribution tests, CBR tests (4-day soak), shrink/ swell tests, aggressivity suites (pH, SO₄, Cl and resistivity testing, point load test per metre of rock recovered, UCS tests).

iii. Ground Investigation Reporting

On completion of fieldworks, a factual and interpretive geotechnical investigation report would be produced summarising the existing subsurface profile and laboratory test result findings. The report will provide geotechnical design parameters for use in foundation and pavement design with additional recommendations for cut or fill batters and groundwater management.

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Contamination

A contamination study is required to provide a Primary Site Investigation (PSI) and Targeted Site Contamination Investigation (TSCI). Currently our understanding is that:

- No known sources of contamination have been identified to date.
- There are no listed or known heritage items on site and the site is not located within a conservation area.

Similar to the geotechnical aspects for this development a contamination investigation will be completed to inform the detailed design stage of the development. This investigation will be combined with the geotechnical investigation to ensure both studies are completed concurrently.

Contamination – Preliminary Site Investigation

A Preliminary Site Investigation (PSI) is required for the site to determine the site history and identify potential sources of contamination including procurement of current / historical land titles, Section 10.7 Planning Certificates and SafeWork Schedule 11 Dangerous Goods searches.

i. Background Data and Information Review

As part of the PSI desktop assessment Stantec will:

- Obtain and review available historical aerial photographs of the site.
- Obtain and review historical land title information for the site – titles will be obtained for the lots that make up the site.
- Obtain and review the SafeWork Schedule 11 Dangerous Goods records for the site. (Note: we have allowed for one Lot to be searched, which will be selected upon consideration of title documents and historical aerial photographs).
- Revisit the geological maps of the area.
- Review groundwater data available for the area.
- Revisit Acid Sulfate Soil Risk Maps and Salinity Risk Maps for the area.
- Obtain and review a Section 10.7 Certificates for the site – Section 10.7 certificates will be obtained for the lots that make up the site.
- Review previous environmental reports (if any) available for the site.
- Review EPA records for the site, including searching the Contaminated Land Public Record and “List of NSW Contaminated Sites Reported to the NSW EPA” online.

ii. Site Inspection

The site inspection will include the following scope items:

- Prepare a Safe Work Method Statement (SWMS) to ensure the safety of Stantec personnel, site occupants and the general public during the site walkover.

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- Liaise with Client / the relevant site occupants to facilitate access to the premises on the site.
- Undertake a site inspection to identify potential sources and indicators of contamination and potential environmental or human receptors. The inspection would be completed by an experienced environmental professional from Stantec.
- Record observations gathered on site.
- Interview current site personnel (if applicable/available) regarding current and historical land use practices, undertaken at the site.
- If safely accessible, any underground storage infrastructure would be inspected, and tanks dipped to determine if product is still present.
- Document the site and surrounding areas in a photographic log.

iii. Reporting

The PSI report will be prepared in accordance with the NSW EPA (2020) Consultants Reporting on Contaminated Sites Guidelines, and will:

- Define the purpose of the investigation.
- Identify the site history.
- Identify past and present potentially contaminating activities (on- and off-site sources).
- Identify and define the potentially contaminated media.
- Describe the condition of the site and surrounding environment.
- Define the geological and hydrogeological setting.
- Inform potential contamination risks relating to construction.
- Preliminarily assess soil against the NSW EPA Waste Classification Guidelines to establish an indicative classification in case offsite disposal of solid waste was necessary and preliminarily assess for the presence of acid sulfate soils.
- Provide a preliminary assessment of site contamination and contaminants of potential concern:
 - Provide a conceptual site model.
 - Identify data gaps in the assessment of site contamination.
 - Identify recommendations for further investigation, if required.

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Contamination – Targeted Site Contamination Investigation

Based on the findings of the PSI, an appropriately scoped TSCI will be prepared for the next stage of the study and will likely comprise the following.

i. Fieldwork

- Prepare a Safe Work Method Statement (SWMS) to ensure the safety of Stantec personnel, site occupants and the general public during the targeted intrusive site assessment.
- Liaise with client / the relevant site operators to facilitate access to the premises on the site.
- Undertake a Dial Before You Dig (DBYD) search to identify potential overhead and subsurface utilities and services. A licensed third-party service locator will then be engaged to clear the location of proposed sampling points for the presence of underground services.
- Undertake an intrusive investigation within the boundaries of the site as described below: -
Excavation of twelve (12) sampling locations are proposed for targeted areas of the site footprint. Sampling points will be situated within potential contaminant sources identified during the PSI (if project timing allows).

Sampling locations will be to a maximum of 3 m below ground level, to 0.3 m into natural soil, or upon refusal (whichever is encountered first).

Soil samples will be screened in the field for the presence of volatile organic compounds (VOCs) utilising a calibrated Photoionisation Detector (PID). Excavated soil will also be assessed for visual and olfactory indicators of contaminants such as odour, sheen, discolouration, staining, and for the presence of anthropogenic materials including asbestos containing materials.

Submission of primary samples and duplicate samples to a NATA accredited laboratory for the following analytical suites:

- Total Recoverable Hydrocarbons (TRH).
- Benzene, Toluene, Ethylbenzene and Xylenes (BTEX).
- Polycyclic Aromatic Hydrocarbons (PAHs).
- Phenols.
- Polycarbonate biphenyls (PCBs).
- Organochlorine Pesticides (OCP) / Organophosphate Pesticides (OPPs).
- Heavy Metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc).
- Asbestos in soils (absence / presence).

To satisfy Quality Assurance / Quality Control (QAQC), soil samples will be collected and analysed at a rate of 1 in 20 samples or 5%. Rinsate samples and trip blank/spike samples will also be submitted for analysis at a rate of one per day of field investigation.

Document the site in a photographic log.

ii. Reporting

A Targeted Site Contamination Investigation (TSCI) report will be prepared in consideration of with the NSW EPA (2020) *Consultants Reporting on Contaminated Land* Guidelines and the NEPC (1999)

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National Environmental Protection (Assessment of Site Contamination) Measure, as amended 2013 (ASC NEPM).

Subject to the limitations of the assessment approach, a Targeted Environmental Site Assessment report will be prepared that considers information gathered during the desktop review, site walkover and soil sampling / analysis. The report will provide preliminary statements on the following:

- Identification of contamination risks and constraints.
- Statement of human health and / or ecological risks identified, if any.
- Recommendations for further actions and controls, including additional investigation and/or remediation.
- Include cost estimates for further work requirements.
- Analytical data will be compared against the Health Investigation Limits, Health Screening Levels, Ecological Investigation Limits and Ecological Screening Levels derived from the NEPC (1999) National Environment Protection (Assessment of Site Contamination) Measure.

Our reporting will be endorsed by a Certified Environmental Practitioner – Site Contamination Specialist (CEvP – SC).

I trust this preliminary information provides the information you require. Should you have any questions or require any further information, please do not hesitate to contact the undersigned.

Regards,

STANTEC AUSTRALIA PTY LTD



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