Woolacotts.
CONSULTING ENGINEERS

# School Infrastructure NSW

## Centre of Excellence in Agricultural Education (CoE)

## Soil and Groundwater Assessment

**20-307 | 29th June 2021 | SSDA Submission**

# Contents

# Document control

| Rev | Date | Revision details | Approved | Verified | Prepared |
|---|---|---|---|---|---|
| A | 28.04.21 | SSDA Submission | JAS | JC | AP |
| B | 29.06.21 | Minor Adjustments | | | AP |
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# 1.0 Introduction

Woolacotts Consulting Engineers have been engaged by the Department of Education (DoE) to prepare a Soil and Groundwater Assessment for the proposed Centre of Excellence in Agricultural Education (CoE).

The new proposed Centre of Excellence in Agricultural Education (CoE) is to be located within the Western Sydney University site off Vines Drive, Richmond ('The Site'). Londonderry Road is located to the west of The Site and Vines Drive is located to the north-east of The Site. The total lease area is approximately 11.37ha. Refer to Figure 1 below for the site location and extent.

The proposed high school includes a single-story complex of 6 buildings and ancillary structures located mainly over the eastern side of the site.

The purpose of this report is to:

- Assess potential impacts on surface and groundwater, soil, related infrastructure, and watercourses.
- Detail measures and procedures to minimise and manage the generation and off-site transmission of sediment, dust and fine particles.
- Assess of salinity and acid sulphate soil impacts.


**Figure 1 – Site location**

# 2.0 Proposed Development

The proposed development involves the construction and operation of a new Centre of Excellence (CoE) in Agricultural Education on a leased land parcel within the Western Sydney University (Hawkesbury Campus) site, Richmond NSW.

The CoE will provide new agricultural / STEM teaching facilities with general learning and administration spaces to be utilised by rural, regional, metropolitan and international school students. The CoE will accommodate up to 325 students and up to 20 full-time employees consisting of farm assistants, administration staff and teachers and up to five (5) itinerant staff members. The CoE will also include short-term on-site accommodation facilities for up to 62 visiting students and teaching professionals from regional and rural NSW.

The CoE will include five science laboratories, ten general learning spaces, practical activity teaching areas, seminar, botany room, administration block and accommodation facilities. It will also include covered outdoor learning areas, dining / recreation hall, canteen and kitchen, agricultural plots, significant landscaping spaces, car parking and provision of necessary infrastructure.

The proposed development has been designed to be well integrated into the Western Sydney University site, having due regard for scale, bulk and orientation of existing buildings. The educational facilities will display linear open building forms in single story design with open spaces and lightweight construction techniques. The site is benefitted by Blue Mountains views to the west and the building and landscape plans have incorporated viewing opportunities into the design.

Refer to Figure 2 below for the proposed Site Plan.

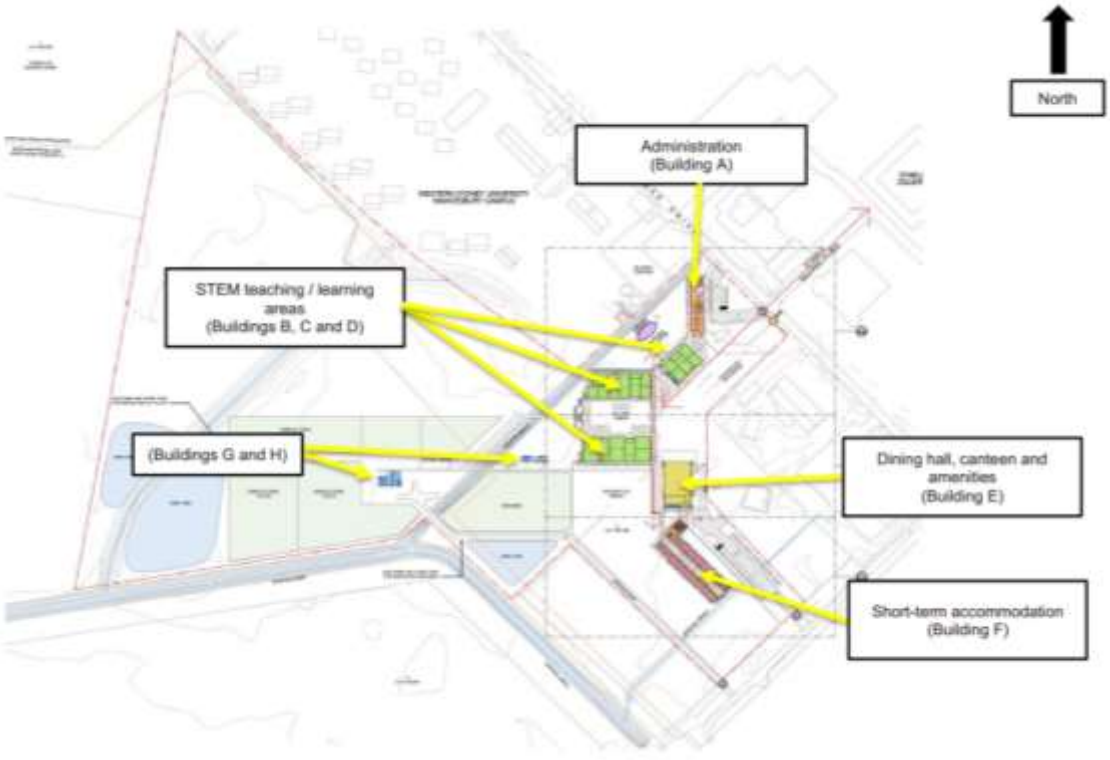


**Figure 2 – Proposed Site Plan**

# 3.0 Site Investigations

Soil and water information relating to The Site has been obtained from the following documents:

- Douglas Partners – *Remediation action Plan,* Project 85644.05 Dated March 2021
- Douglas Partners – *Detailed Site Investigation (Contamination),* Project 85644.04 Dated March 2021
- Douglas Partners – *Detailed Asbestos Delineation Investigation*, Project 85644.06 Dated August 2018
- Douglas Partners – *Additional Geotechnical Investigation*, Project 85644.02 Dated January 2018
- Douglas Partners – *Preliminary Site Investigation (Contamination)*, Project 85644.00 Dated November 2016

# 4.0 Subsurface Soil Profile

The Site contains ‘very loose’ to ‘loose’ topsoil / filling at depths of approximately 1.0m to 1.5m below natural ground level. Beneath the layer of topsoil / filling is alluvial soils which comprise of ‘very stiff’ to ‘hard’ clays / silty clays and ‘medium dense’ to ‘very dense’ clayey sands / silty sands. The alluvial soils reach depths of approximately 17m to 19m below natural ground level. Beneath the soils is assumed to be either gravels or weathered bedrock.

For further information on the soil profile refer to the *Additional Geotechnical Investigation* report (dated January 2018).

# 5.0 Groundwater Conditions

Groundwater was encountered at relatively shallow depths in some areas of the site (approximately 0.3m) and was not observed to depths of up to 10m in others. This suggests that perched groundwater exists within the soils and that the regional groundwater table is deeper than observed. Long term monitoring will be required to confirm groundwater levels.

For further information on the groundwater conditions refer to the *Additional Geotechnical Investigation* report. (dated January 2018).

# 6.0 Soil and Groundwater Contamination

The Site has historically been used for agricultural purposes. In addition to agricultural use, a southern portion of The Site appears to have been backfilled with demolition waste and is contaminated. Refer to Figure 3 below for the extent of contamination on The Site.

For further information on the contamination refer to the *Detailed Asbestos Delineation Investigation* report (January 2018) and the *Detailed Site Investigation* report (dated March 2021).


**Figure 3 –Contamination Area**

# 7.0 Impact on Soil and Water

The proposed development will potentially impact The Site's soil and water during the construction of the building foundations, external pavements, car parks and landscaped areas.

Potential impacts include the erosion of soils and sedimentation getting into watercourses. To mitigate these potential impacts, it is proposed to provide sediment and erosion control measures as detailed in Section 9.0.

With respect to the contamination present on site, a remediation action plan has been provided detailing the appropriate methodologies to remediate the site. The current strategy involves placing contamination that can be retained on-site below the building footprints and placing more serious contamination in a containment cell.

For further details on the contamination management refer to the *Remediation action Plan* (dated March 2021)

# 8.0 Erosion and Sediment Control

During construction, erosion and sediment control measures are to be provided in accordance with the requirements of “Managing Urban Stormwater Soils and Construction, 4th Edition (Blue Book)”. These measures will include silt fences on the low side of the site and silt traps at stormwater pits. Dust control measures will also be provided.

Other measures to be provided on site during construction include construction exits for all vehicles leaving the site, and revegetation of the site as soon as practicable. Erosion control measures must be inspected and maintained after each rain event and at intervals not exceeding two weeks.

Refer to the *Civil Engineering Report* by Woolacotts for the Erosion and Sediment Control Plan.

# 9.0 Salinity and Acid Sulphates

Soil samples were taken from The Site and laboratory tested for aggressivity (electrical conductivity, PH, chloride, and sulphates). The aggressivity testing indicated non-aggressive conditions suggesting salinity and acid sulphates are not a concern for this site.

Further information regarding aggressivity testing, refer to the *Additional Geotechnical Investigation* report (dated January 2018).