UNSW

Materials Science and
Engineering New Building

State Significant Development Application Report

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GRIMSHAW

Revision

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Contents

Executive Summary: 0

Introduction: 1

Background 1.1

Context: 2

Approach 2.1
Kensington Campus 2.2
Physical Sciences Precinct 2.3

Urban Design: 3

Photographic Survey 3.1
Campus Structure 3.2
Urban Strategy 3.3
Access and Service 3.4
Public Domain 3.5
Built Form & Height 3.6
Shadow Diagrams 3.7

The Base Building: 4

An Instrument for Science 4.1
The LAB Typology 4.2
The Breathing Workplace 4.3
Collaborative Tissue 4.4
Connected Neighbourhoods 4.5
The Building Fabric 4.6

Sustainability: 5

Integration 5.1
Exploration 5.2

0.0 Executive Summary

The proposed Materials Sciences building is an approximately 20,000m2 addition to the University of New South Wales' research and teaching spaces on the Kensington Campus. More than new facilities for the School of Materials Science and Engineering, the building represents the first steps towards a Physical Sciences precinct, and the establishment of a major addition to the amenity of the Lower Campus.

Set within an updated strategic plan for the lower campus, the new building addresses both an emerging future context - sitting as the backdrop to the future Alumini Park/College Green to the North - and the strengthening of the existing cluster of scientific buildings linked by Union Road to the South.

The ongoing improvement of a legible lower campus public realm has been addressed through the consideration of the building entry and strengthening of the existing Science Court and the routes to it, and academic synergies to the existing Chemical Sciences and Law buildings. Consideration has also been given to a potential future related research building development to the West. Strategically, the building comprises of two main vertical neighbourhoods - a 'Campus' neighbourhood of the Ground Floor, Basement, and Level 1, that provides student facilities, teaching laboratories, campus wide shared specialist research centres, and amenity and interface with the public realm. This then provides a transition to the research neighbourhood on level 2 to level 7.

Functionally, the new building comprises of a basement that will accommodate vibration sensitive equipment, such as electron microscopes. The ground floor will open up onto the future Alumni Park/College Green. Activation to this edge will be provided by a café, entrance lobby and Centralised Allocated Teaching Spaces (CATS) all to be located under a generous colonnade. Laboratories that showcase material sciences will also be located on ground floor. A clearly defined service access route for delivery of goods from the Chemical Science Building and refuses removal is provided to the southern ground floor edge, along Union Road. Level 1 will accommodate student laboratories and a Physical Science student learning centre that will face onto the future Alumni Park/College Green. Levels 2 to 4 will accommodate research based laboratories and associated office space. Levels 5,6 and 7 are to remain as shell and core for future fit out. Level 8 is a rooftop plantroom, set back from the façade edges in order to reduce the visual impact. The plantroom roof is approximately 42.3m above ground.

The building layout and form is derived from a few simple but powerful internal planning concepts. Firstly the central service corridor typology, which provides a dedicated inter-laboratory access path without leaving the laboratory zone. The basic laboratory module is proportioned to suit requirements of material science and working with large pieces of specialist equipment. Backing onto the services corridor allows individual laboratories to separate out specialist support equipment and services. The typical module is repeated out to the maximum practical length constrained by site and horizontal services lengths. The lab zone is then sandwiched by services risers, escape stairs and the goods lift. This creates a maximised contiguous zone providing the highest possible degrees of flexibility, adaptability and serviceability, in a rational, modular structure – the laboratory and research 'core' of the building.

This laboratory 'core' is then enveloped by a habitable 'skin' containing offices, meeting rooms, and breakout spaces, providing an environmental cocoon for the laboratories – modulating temperature, direct light, and air pressures.

The office skin zone distinctly contrasts with the lab core – where the labs need to be hard, have clean surfaces, controlled lighting and environments, the office skin is warm, uses natural materials, allows individualisation of light and environment. Where the structure of the core is solid, heavy and robust, the skin is light, delicate and inviting.

The outwards expression through the building's façade projects material honest, legibility, and excellence in material use and their articulation. The contrasting expression of masonry-like solar blades as the façade materials that celebrate durability and tradition of materials with the transparency and lightness of a refined and high performance curtain wall skin, provides refined play of light, depth, shadow and transparency, and resonates powerfully with the existing palette of the campus and the character of understated confidence.

Introduction

1

Introduction: **1**

Background 1.1

1.1 Background

UNSW is a teaching and research institution of international, national and state significance. It is ranked 46th worldwide in the World University Rankings (2010) and is a member of the Group of Eight (Go8), a coalition of Australia's leading universities. Amongst others, it has Faculties of Medicine, Science and Engineering and is a key driver of economic growth. It is renowned for the quality of its graduates and its commitment to new and creative approaches to education and research. Notably, it is also the largest employer within the Randwick LGA.

The Campus was established in 1949 and has grown to a dynamic urban environment of more than 45,000 enrolled students, over 6,000 staff and 140 buildings over the Kensington Campus' 38 hectares. The School of Materials Science and Engineering (as part of the Faculty of Science) is one of the earliest schools to be established at the University. The School is part of the Faculty of Science and is housed over three buildings on the lower campus, two of which adjoin the proposed site of the MSEB. In recent years it has become one of the most highly ranked research performers at UNSW.

Materials Science and engineering is the underlying science of high performance materials including metals, ceramics, plastics, composites, nano-materials, electronic materials and biomaterials. Research in this field combines the science of developing high performance materials and engineering new applications, customizing innovative processing techniques and predicting performance.

The School is involved in research ranging from materials production, including their extraction from ores and their refining, to the design, development, processing and recycling of materials for use in aerospace, transportation, electronics, energy conversion and biomedical systems. Advanced materials can provide a major competitive advantage in virtually every part of a country's manufacturing industry. The School's aim is to be Australia's leading contributor to research and teaching in materials and to provide the best materials engineers and scientists to the profession through undergraduate and postgraduate programs, which are currently Australia's largest.

The majority of the School's existing accommodation, constructed in the 1950s and 1960s, has failed to respond to a maturing teaching and research environment and is now inadequate and out dated with consequent impact on the School's operation and image, particularly the research space which is central to its function. Operational inefficiencies are impacting outputs and their ability to attract research funding, academics and students. A new building has therefore been a growing priority for the University as part of the need to extend physical sciences in the lower campus and to meet the School's growth resulting from expanding funding for its high profile research. The proposal is further described below.

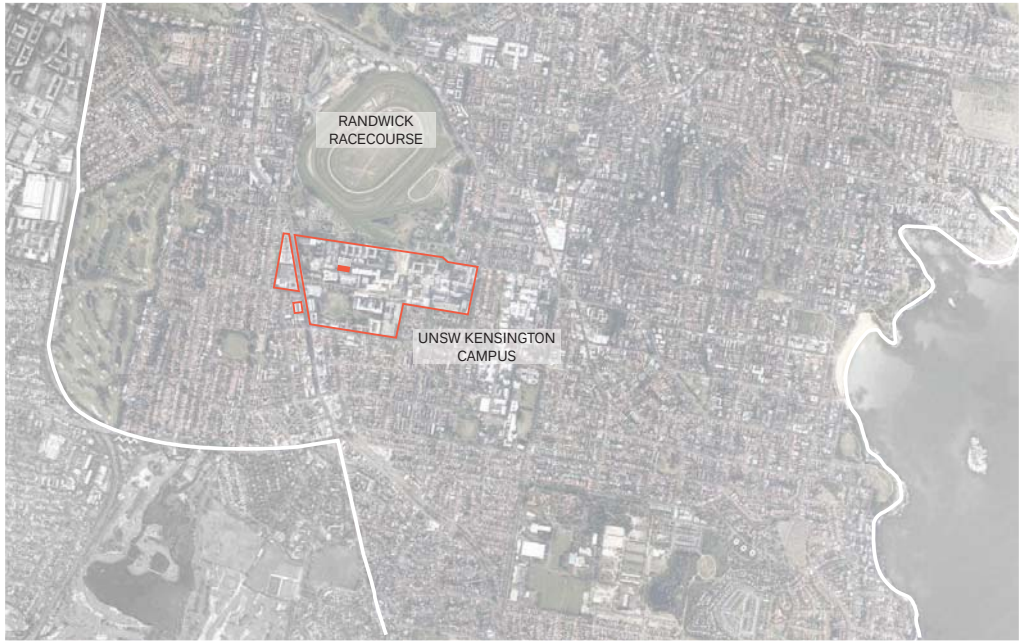

Figure 1.01 UNSW Kensington Campus in its sub-regional context

Context

2

Context: **2**

Approach 2.1
Kensington Campus 2.2
Physical Sciences Precinct 2.3
2.4
Campus 2