



CASE STUDY

ADELAIDE BOTANIC HIGH SCHOOL REACHING NEW HEIGHTS IN EDUCATION



A new 'world class' CBD vertical secondary school with an educational focus on health and STEM

(Sciences, Technology, Engineering and Mathematics) and interdisciplinary subjects. The school is designed to accommodate 1250 students offering contemporary interdisciplinary teaching and learning.

This state-of-the-art designed school will promote individualised learning, creating settings for innovative teaching, incorporating new technology, environmental sustainability, collaboration and exploration of the surrounding environment.

Designed by Cox Architecture in partnership with Design Inc, the Adelaide Botanic High School delivers an innovative and flexible space to encapsulate the best in contemporary learning pedagogy. The ageing University of South Australia Reid Building was refurbished, providing 6 learning levels plus a basement hosting music and drama practice spaces and secure parking for 170 bicycles. The refurbished building is linked by a glass atrium to a brand new 7 storey building, also with a basement and rooftop terrace. Five rooms cantilever from the two buildings into the atrium overlooking the stunning surrounds of the Adelaide Botanic Gardens, Adelaide Zoo, parklands and the vibrant university precinct.

The purpose-built learning environment enables the building architecture to enhance the student learning experience. Once hidden mechanical and electrical engineering mechanisms within the Reid Building have been exposed, and the new building design has mirrored the design, making it difficult to determine old from new. Students are exposed to the application of engineering principles and technology to building design,

construction and operation. Learning from the built form will deliver intuitive, investigative, environmentally aware students who will shape our future communities.

COST MANAGEMENT CONSULTANCY

Rider Levett Bucknall (RLB) was engaged by the Department of Planning, Transport and Infrastructure to provide full cost management services. RLB began working closely with the Department for Education and the Department of Planning, Transport and Infrastructure in early 2015 preparing early cost models for building options based on space planning schemes.

With the Adelaide Botanic High School being the first true vertical school in South Australia, RLB was able to benchmark similar projects from our Global Cost Database enabling our Cost Planners to provide relevant cost data from precedent projects.

As the Department for Education determined projected student needs, RLB was requested to prepare cost options for 1000, 1250, 1500 and 2000 student capacities to determine the relative cost benefit and value proposition to increase capacity.

RLB was also involved in developing cost-efficient high-performance design elements such as: energy efficient wall façade systems, modular atrium glazing systems, efficient structural solutions (in particular the sports gym which supports an outdoor learning terrace), and external 'pop-out' learning pods etc.

All internal design elements were designed with flexibility and robustness to minimise ongoing maintenance and achieve outcome alignment with the fully integrated team.

'The project success could not have been achieved without a high performance, collaborative project team across all disciplines.' said Managing Director, Andrew Suttie.

COST PLANNING CHALLENGES

Key project challenges included:

- Understanding the existing building conditions and the adaptive reuse implications. These included hazardous material removal, earthquake and seismic upgrades, building code compliance upgrades, façade removal and reinstatement, external link bridge connections and full building engineering services upgrades
- With the step change in educational pedagogy, challenges occurred when benchmarking the investigation of the functional fitout requirements, such as open plan teaching environments which also have the ability to contain teaching spaces when required with operable walls, and the inclusion of the latest ICT/AV teaching requirements
- Procurement by Early Contractor Involvement (ECI) comprising of two Tier 1 Contractors in competition during the Design Phase, with both providing simultaneous program, cost and constructability advice (a relatively untested innovative procurement strategy)
- Providing a robust and independent cost plan throughout the project planning, design and documentation phases, often involving conflicting advice from the ECI Contractors
- Undertaking multiple value engineering sessions to align to the Value Management Roadmap to ensure not only budget compliance, but to achieve maximum value for



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money, and whilst considering the longevity of building materials and engineering solutions

- Detailed tender assessments to ensure appropriate conversion into a Total Fixed Price (TFP) Design and Construct (D&C) Contract and successful novation of the design team
- Undertaking cost analysis studies with varying construction methodologies to safely construct a new development adjacent an existing occupied University Building (including an operating animal house at basement level). This involved analysing several construction staging methods, external acoustic treatment options, flexible structural building connections etc

COST PLANNING OPPORTUNITIES

Our in-house technology, ROSS 5D enabled our Cost Planners to prepare accurate estimates, cost plans and models from diverse information sources including BIM Models, 2D and 3D CAD drawings, hand drawn illustrations, schedules and other project documentation. Our software enabled flexibility in presentation and analysis of cost models allowing for a range of different estimate breakdowns, by utilising either: elements, trades, floor by floor or building components, separate buildings and the project phases.

Site infrastructure is often an area that is not dealt with adequately by cost consultants, with general allowances being allocated in early cost plans. Infrastructure is a specialist division within RLB that is staffed with Engineers and specialist Civil Estimators who complement our Quantity Surveying personnel. RLB was able to utilise its expertise for the infrastructure component.

RLB also drew from the expertise of our in-house Engineering Services Cost Managers to provide an independent assessment and benchmark the engineering services estimates. RLB provided a full review of the site infrastructure costs, including stormwater, gas, sewer, electrical, etc.

Several façade scope verification and value management sessions were undertaken with proactive industry feedback to ensure budget compliance, whilst maintaining the architectural vision for the school.

RLB was a key team member in assisting the Department for Education in realising the construction of two additional levels to accommodate the increased anticipated student population of 1,250.

CONTRACT SELECTION AND PROCUREMENT STRATEGY

The project commenced with an Early Contractor Involvement (ECI) phase, with the intent to convert into a Total Fixed Price (TFP) Design and Construct method of procurement.

RLB reviewed and benchmarked functional areas to ensure the proposed scheme was efficient in addition to reviewing project risks and incorporating appropriate contingencies. Following a robust Project Risk Review, establishing the appropriate project contingencies was critical. Due consideration was required for all the project's varying risk factors including; working adjacent an occupied building, potential for inground indigenous archaeological artefacts, hazardous material removal, challenging structural building link connections etc. Applying the appropriate contingency levels was a key challenge to ensure the building fabric and functionality was ultimately not compromised.

RLB facilitated multiple value management sessions, including with the ECI partners to ensure best value was achieved for the Department of Planning, Transport and Infrastructure and the Department for Education.

For an ECI/TFP Procurement Model the dynamics are different and reporting protocols need to be understood and observed by the Cost Planning Team.

In a pure Managing Contractor Model the cost plan or model would be shared with the entire project team including the Contractor as a procurement tool for budgeting the trade scope. In effect the Managing Contractor is an integral member of the consultant team and major cost risks remain with the client.

However, under an ECI/TFP Procurement Model, the Contractor will assume the major cost risks, and care needs to be given in relation to the extent of the cost planning and cost modelling information shared. Otherwise there remains the risk that the TFP commercial negotiations process could be potentially compromised.

PROACTIVE BUDGET REPORTING

RLB took a proactive, solutions based approach to the management of scope and costs. When the budget was threatened, it was important to 'get on the front foot' to tackle the issues.

RLB provided early warning budget advice and facilitated strategic Value Management Sessions to understand the issues and opportunities that were available. RLB monitored the developing design documents to ensure that the aligned value management initiatives were implemented. We believe the process worked particularly well and set the Adelaide Botanic High School project

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up for successful commercial negotiation and commercial close.

LESSONS LEARNED

The Adelaide Botanic High School was delivered by Early Contractor Involvement (ECI), then converted to a Total Fixed Price Contract (TFP), which does heavily rely on: a comprehensive Principal's Project Requirements (PPR), precise client vision, robust cost planning, proactive value management and budget forecasting.

The project was delivered on time and within budget and is regarded as a benchmark contemporary secondary education facility.



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CLIENTS

Department of Planning Transport and Infrastructure
Department for Education

LOCATION

Adelaide, South Australia

VALUE

\$100 million

COMPLETION

January 2019

RLB PROJECT LEADERSHIP

Andrew Suttie, Managing Director
Sam Martin, Associate

DESIGN TEAM

Cox Architecture partnered with
DesignInc, TCL, AECOM and KBR

BUILDING CONTRACTOR

Lendlease Building Contractors Pty Ltd