



# Mid Year 2005 Final Examination

University of South Australia

---

Student ID:		Student Name:	
-------------	--	---------------	--

SCHOOL OF NATURAL & BUILT ENVIRONMENTS
--

Master of Project Management Graduate Diploma in Project Management Graduate Certificate in Building & Planning
---

Subject Area:	BUSS	Catalogue Number:	5070
---------------	------	-------------------	------

<b>Integration, Scope and Risk Management</b>
---

Examination Day: Thursday	Examination Date: 30 June 2005
Examination Time: 2:00PM	Length of Exam: 3 Hours of Exam time preceded by 10 minutes of Reading time – a total of 3 hours 10 Minutes.  For ENTEXT students there is 10 minutes of Reading time plus 3.5 Hours of Exam time – a total of 3 Hours 40 Minutes.

Examination Venue:	RAS/Ridley Centre
--------------------	-------------------

Instructions to Candidates
----------------------------



- This exam consists of 4 questions and you need to answer all questions.
- All questions are of equal value, each being 25% of the final mark.
- Questions 3 and 4 are to be answered with reference to the given Case Study.
- No reference materials are allowed. Calculators are allowed.

### **Question 1**

Integration is a function of the Project Manager. Discuss what it is that the Project Manager must integrate. By using examples discuss the skills and attributes the Project Manager will require to effectively **integrate** a project.

### **Question 2**

Discuss the objectives of scope management, identify the 2 key tools used in scope control and how they are used and also discuss the steps that are undertaken in a scope management plan.

### **Question 3**

**Answer this question in relation to the given Case Study**

From the information in the case study, list the risk categories that best fit the project risks. There are statements in the case study that could be considered as having been undertaken as a mitigation treatment for identified risks. Identify at least 4 of these statements and suggest the risks they might mitigate.

### **Question 4**

**Answer this question in relation to the given Case Study**

Define each of the components of a project scope statement and then discuss how the statement of 11 functional requirements in the case study might have influenced the development of the scope of works for the project.



## CASE STUDY

### THE NORTHERN GRANDSTAND AT THE GABBA

#### Ahead of Time and Budget

In calling tenders for the proposed Northern Grandstand in December 1994, the Brisbane Cricket Ground Trust (BCGT) sought, as no doubt all clients do, certainty of outcome not only in terms of the time and cost of the project delivery process but in the satisfaction of the functional and performance requirements of the new facility.

In due course, a design and construct tender was accepted from Watpac Australia Pty Ltd. We would undertake the project through our Design and Construct Division under a form of agreement which locked in these elements of certainty which the Trust sought. Comprehensive warranties in regard to the design brief and functional specification were included under the agreement, which included a detailed statement of Functional Requirements.

Bonus clauses were incorporated for early completion of critical areas as were liquidated damages for late completion.

The roles and responsibilities of the project team membership were consistent with the contractual responsibilities. Time and cost limits were of course established whilst design approval by the Trust was effected through a "permission to use" criteria without removing the contractor's ultimate responsibility to meet functional outcomes. The obtaining of building authority approvals and certificates remained with Watpac, and we had no recourse to contract variations in this regard.

The Trust's client representative team needed exercise only minimal oversight to ensure that we fulfilled our obligations as contractors. Regular compliance reports were prepared by their design consultants.

Adding to the challenge was the delay in letting the contract until 13 March 1995. Project completion was still specified to meet the fixed requirement of one day international cricket fixtures on 5 and 7 January 1996.

The structural efficiency of the design achieved by Robert Bird & Partners was a primary factor in achieving an economic, buildable solution but which also acknowledged the Daryl Jackson architectural expression, particularly in regard to the exposed structural steel framing.

The confined nature of the Gabba's location led to an eye-catching feature in which the end three of the 15 structural bays of the grandstand are cantilevered out over busy Vulture Street. The Trust negotiated an airspace lease with the State Government to sanction this approach. This feature will continue when the grandstand is subsequently extended to the east.

The roof incorporates a number of interesting features. The roof covering consists of a teflon coated fibreglass fabric known commercially as Shearfill (and which gives the grandstand its distinctive tropical feel (the same material has been used at the Hong Kong football stadium). The material was imported from the USA but fabricated locally in Brisbane. The top chord of the main roof trusses is in fact a 460 UB which forms the gutters to which the fabric drains. These gutters are in turn drained via a siphonic roof drainage system such that the whole roof area is collected into a 225mm diameter underground pipe.

A further enhancement of the design came about through a fire engineering analysis of the building's structure which was undertaken by the Melbourne laboratories of BHP Research. Through this study, a variation to the Building Code of Australia (BCA) was obtained from the Queensland Building Tribunal for the use of unprotected steel framing in substantial parts of the building. The study had established that a high level of structural safety was evident in the event of a fire and that the fire safety objectives of the BCA would be satisfied.

The building services are controlled by a Direct Digital Control (DDC) system which allows the Trust to pre-program the start up and close down of the facility in accordance with standard event requirements, eg, a day-night cricket match, day or night time AFL matches, or for specific one-off events.

FF&E procurement for the \$25 million facility was shared between the Trust and Watpac.

Project management considerations centred on the fixed window of time in which the contract had to be completed given the scheduled one day cricket international fixtures on the first January weekend of 1996. This meant that at the letting of the contract there were 41 calendar weeks available in which to complete as a minimum, the public (as opposed to corporate) facilities for the January deadline. Ironically, no sooner had the demolition work commenced than it was interrupted by Queensland's first home Sheffield Shield final, which subsequently saw the home state's first ever Shield victory!

Not only was the target achieved, but the whole facility was completed for use at the cricket internationals and Practical Completion was declared some five weeks early. This could only have been achieved through the adoption of an appropriate project delivery system by the Trust and the selection of a project team of proven performance. The team then vindicated the Trust's decision by establishing close working relationships in adhering to the project management process.



Watpac Australia Pty Ltd has third party accreditation of its Quality management System to AS / NZS ISO 9001:1994 and our design management processes were fully tested in this very fast tracking of the design and construction process. The project was selected for auditing by our QA assessors (NATA) and demonstrated fulfilment of the QA requirements both in the design management and construction phases.

The grandstand has proven to be a considerable success for all concerned. Spectators and players have offered their congratulations as have the media. Major AFL and cricket events, since the grandstand was first used on Boxing Day, have confirmed that the functional performance requirements have been met and to the extent that the demand for further high quality facilities at the ground looks likely to be answered in the short rather than the long term by the Brisbane Cricket Ground Trust.

#### **Statement of Functional Requirements**

1. A modern grandstand facility which incorporates the best combination to the maximum extent possible of the latest in functional design provisions and technological developments being actively considered for incorporation or incorporated into current or planned grandstand facilities for major sporting venues in Australia.
2. A flexible design capable of expansion or modification to cope with changes in demand over time, with a capacity at completion to comfortably accommodate a nominal 9,600 general admission patrons with unobstructed viewing of the playing arena and which provides a corporate area consisting of 21 twelve person suites, a 350 person function room capable of subdivision into three discreet rooms and 27 nine person outdoor boxes. (These quantitative requirements were reviewed in discussion with the Trust, as design developed and other needs were taken into account.)
3. An operational facility which can be efficiently operated and maintained and handed over to the owner with all information necessary for this requirement to be met as and from the date of handing over.
4. A facility which is durable and which has a designed structural life of the building free from significant structural repairs of not less than 50 years and of all services of not less than 20 years.
5. A facility which is accepted by the public as appropriate for a major sporting venue and which provides the convenient and economic access for the public to seating and public facilities and food and beverage outlets and is free of design deficiencies and hazards and maximises the access available for persons with disabilities.
6. A facility which embodies commercial and functional design considerations properly coordinated and which is capable of being operated as a commercial success reasonably acceptable to the Owner and to tenants and licensees.
7. A facility which provides for convenient and economic access to all services and utilities both for the purpose of regular inspection and maintenance and for any subsequent modification, repair or replacement.
8. A facility which incorporates materials, fittings and fixtures which are durable and long lasting consistent with the best quality products of the relevant type and having regard to the location and use of the works.
9. A facility which incorporates fittings, appliances and machinery with the highest levels of operating efficiency and energy savings from amongst available products.
10. A facility which requires minimum maintenance and which can be maintained at minimum cost with a minimum of labour and without the need for specialist equipment.
11. A facility completed according to the works program and on or ahead of the date for Practical Completion.

Extract from Australian Project Manager March 1997  
Gordon Sutherland, Watpac Australia Pty Ltd - Author

\*\*\*\*\*END\*\*\*\*\*