Australian Jockey Club

Spectator Precinct

Ecologically Sustainable Development

Issue 3 | September 2010

Arup
Arup Pty Ltd ABN 18 000 966 165

Arup
Level 10 201 Kent Street
Sydney NSW 2000
arup.com.au

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 220759

ARUP

Document Verification

ARUP

Job title		Spectator Precinct			**Job number** 220759
Document title		Ecologically Sustainable Development			**File reference**
Document ref		220759			
Revision	**Date**	**Filename**	Report.docx		
Draft 1	06/09/10	**Description**	First draft		
			Prepared by	Checked by	Approved by
		Name	AS	NH	NH
		Signature			
Draft 2	16/09/10	**Filename**	0002ESD Report Spectator Precinct.docx		
		Description			
			Prepared by	Checked by	Approved by
		Name	AS	AS	NH
		Signature			
Issue 2	22/09/10	**Filename**	0003ESD Report Spectator Precinct Issue 2.docx		
		Description	Issue 2		
			Prepared by	Checked by	Approved by
		Name	ASAS	RF	NH
		Signature			
Issue 3	23/09/10	**Filename**	0003ESD Report Spectator Precinct Issue3.docx		
		Description	Issue		
			Prepared by	Checked by	Approved by
		Name	ASAS	RF	NH
		Signature			
				Issue Document Verification with Document	✓

Contents

Appendices

1 Executive Summary

This report has been produced in response to the Director Generals Part 3A Planning requirements MP 10-0097 for the redevelopment of the Spectator Precinct located on the Western side of the Royal Randwick Racecourse property.

It addresses the Director Generals Requirement (DGR) number 8. Ecologically Sustainable Development which reads:

> *8. Ecologically Sustainable Development (ESD)*
>
> *The EA shall detail how the development will incorporate ESD principles in the design, construction and ongoing operation phases of the development.*
>
> *The EA must demonstrate that the development has been assessed against a suitably accredited rating scheme to meet industry best practice and demonstrate excellence in sustainability consistent with a rating of 4 Green Stars or higher, if applicable.*

The DGR refers to “4 Green Stars” which is generally accepted in Australia as a Green Building Council of Australia (GBCA) rating. Currently no GBCA tool exists to assess the Grandstands and Pavilion Structures. Therefore the Spectator Precinct has been attributed ESD principles that are appropriate for the precinct as achieving an environmental outcome commensurate with a 4 star GBCA rating.

The Stands are BCA class 9b buildings and the GBCA will only allow their tools to be used on buildings for which they were intended and the GBCA currently has no tools that can be appied to this building class. It is understood that the DoP are aware of a pilot tool having existed for Convention Centre type buildings and that it has been suggested that this be used for rating the Stands within the Precinct. This pilot tool was originally used on the Melbourne Convention and Exhibition Centre however it has since been withdrawn and no full tool introduced in its place. There are currently no GBCA tools available that suit the Spectator Precinct and the Arup team have proposed the ESD initiatives contained within this report in order to demonstrate the projects commitment to sustainability.



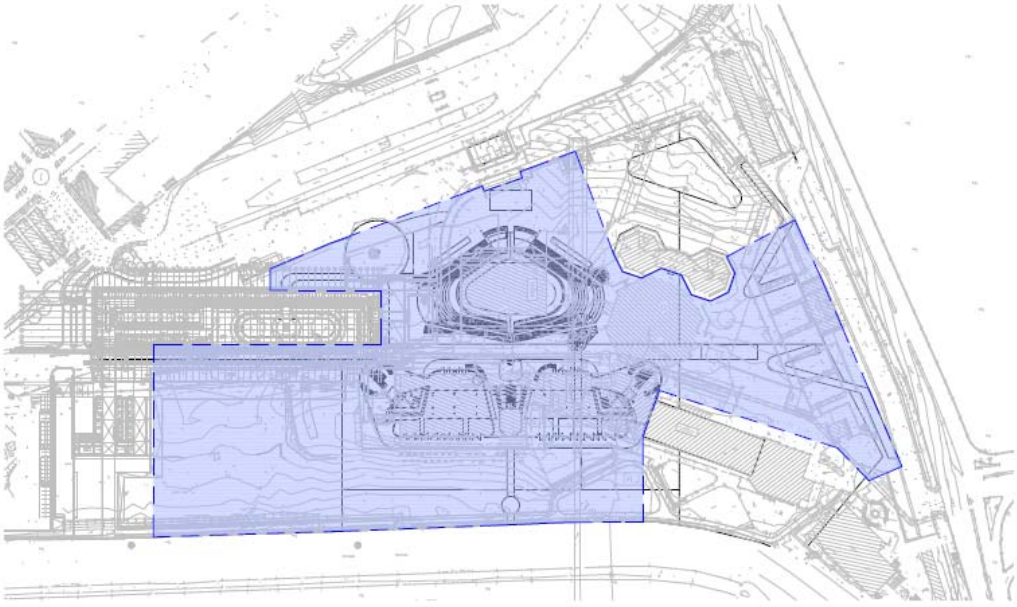
In conclusion, the redevelopment of the Spectator Precinct of the Royal Randwick Racecourse incorporates ESD initiatives and principals throughout the Design, Construction, and Future Operations phases of the project.

The initiatives recommended for incorporation in this report focus on the responsible use of water, energy and materials. Each of the recommendations plays an important part in maximising the buildings sustainable performance in the absence of a rating tool that can be applied to this type of building. The design strategy proposed by the project team represents an assessment of the initiatives and requirements of established green building rating tools that were deemed appropriate for application to the development.

2 Introduction

The redevelopment of the existing Spectator Precinct will see the existing Queen Elizabeth II Grandstand refurbished and the Paddock Grandstand replaced in a development that includes basement levels, a new parade ring and spectator amenities such as kiosks and landscaped areas.

The site overlay below shows the spectator precincts location on site near the intersection of Alison Road and Doncaster Avenue.



3 ESD Principles

3.1 Design

The benefits of integrating ecologically sustainable design measures within the spectator precinct will create healthier buildings with reduced energy and water consumption while using materials of a low ecological impact.




The development's design incorporates ESD principles in the following ways:

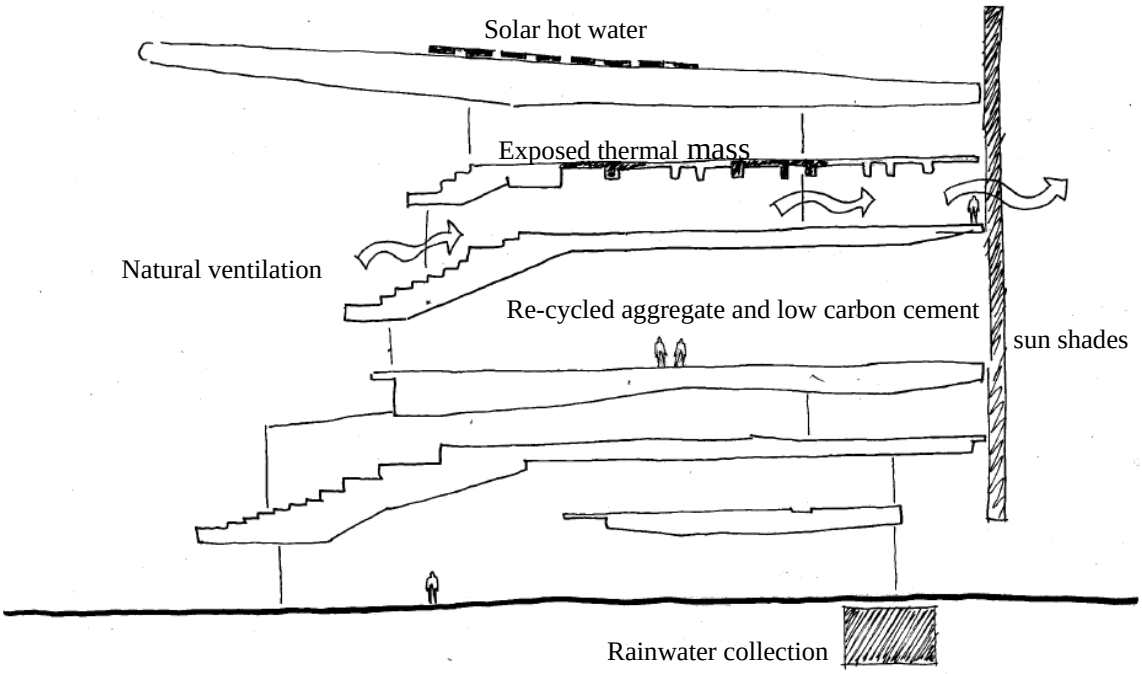
1. Materials re-use strategy. It is anticipated to use a percentage of either re-used or recycled materials where possible. The re-use strategies to be implemented may include:
    a. A percentage of recycled aggregate and cement substitute in concrete slabs on ground.
    b. Where possible materials with a high recycled content will be specified.
2. The QEII and Paddock stands will be designed, where possible, to operate in natural ventilation mode when the appropriate occupancy and weather conditions permit. It is anticipated that the building will be able to operate in natural ventilation mode for approximately 50% of the year, subject to detailed design.
3. Lighting will be designed to operate on sensor controls to reduce energy consumption.
4. The roofs will be designed to harvest rain water (refer to the Arup Integrated Water Management Report).
5. High frequency ballasts will be installed in fluorescent luminaries to avoid low frequency flicker.
6. The QEII and Paddock will be designed to appropriate acoustic requirements to meet occupant comfort.

7. Low volatile organic compound (VOC) paints, carpets & adhesives will be specified, where possible.

8. Timber composite products of low formaldehyde content will be specified, where possible.
9. Timber specified will be of low ecological value. FSC timbers will be specified where possible.
10. The buildings will be of robust construction with the structure and cladding as the predominant finish. This will minimise maintenance and churn.
11. The QEII, Paddock and Owners and Trainers Pavilion are designed as flexible mixed use buildings allowing for multiple uses of the building and maximising occupancy and hence resource use.

12. General hot water will be provided via solar hot water with gas boost, where possible.
13. Domestic hot water will be provided with a circulating return to be blended at 43°C to reduce water waste.
14. Tapware and sanitary ware throughout the Spectator Precinct will be selected to reduce water consumption -WELS rated or equal (refer to the Arup Integrated Water Management Report).

15. Energy efficient lighting will be implemented with a combination of compact florescent and LED lighting solutions
16. External lighting will be designed to mitigate light pollution.



3.2 Construction & Demolition

The construction and demolition phases of a building can have a significant impact on ecology. Implementation of an environmental management plan and fulfilling targets to minimise waste to landfill will contribute significantly to the positive environmental outcomes of the development.

Below represents how the developments construction and demolition will incorporate ESD principles.

17. Construction and demolition waste is to be re-directed from landfill. It is anticipated that a minimum of 80% of construction waste by weight will be diverted from landfill.
18. An environmental management plan will be adopted by a contractor with ISO 14001 certification.
19. The development is progressing with the intention of utilising as much of the existing structure as possible.

3.3 Operation

The    operational performance will contribute substantially to the energy use, water minimisation and user comfort of the buildings.

Below represents how the development's operation incorporates ESD principles.

20. Rainwater harvesting from the roofs will be captured and used onsite for WC flushing, irrigation and cooling.
21. When the buildings are operating in natural ventilation mode it will reduce the power consumption of the buildings.
22. The sensor lighting will reduce the power consumption.
23. Commissioning of lighting, HVAC and water systems to ensure design intent.
24. A tenant guide to aid the building users to maintain and upgrade the buildings in-line with the design intent.
25. Operational waste including but not limited to: horse-associated organic waste, paper, plastics, glass, other organics will be separated individually onsite for re-use or recycling either onsite or by external parties.

26. It is anticipated that a proportion of the site's energy will come from less carbon intensive sources than coal-fired electricity. In this event, the spectator precinct would be proportionately supplied by these alternatives that may include solar photovoltaics.