

SPORTS & RECREATION SECTOR INSIGHT GUIDANCE NOTES FOR BOUTIQUE ATHLETIC STADIUMS

PROJECT DATA:

Project Name – WA Athletic Stadium, Perth, Western Australia.

Description – 2,000 seat grandstand with offices, athlete and spectator facilities. Seating for a further 8,000 on landscaped embankments.

Standard of Facility – IAAF certified athletics track with long jumps, pole vault, discus and hammer cages.

Key Cost Factor – 500 lux lighting, upgradeable to TV coverage levels.

Total Cost – \$29 million.

Sector Insight

This Sector Insight examines some of the key issues and findings associated with the development of the WA Athletics Stadium.

1. Location

Orientation – due to Perth's unique prevailing winds, it was vital to consider the orientation of the athletics tracks in maximising athletic performance. This ensures elite performance times are certifiable under international sporting codes.

Sun – as the sun sets, it can impair the spectator's and athlete's view if it is directly in their line of sight. This factor has to be considered in conjunction with the stadium's orientation, wind directions and incorporation of sports lighting.

2. Design

Weather protection – it may be unfeasible to protect all grandstand seats from prevailing winds and rain due to the size of the roof required to protect all occupants. As the roof overhang becomes bigger, it can obscure rearward seated spectator's view of some sports events. It may be useful to provide side weather protection to the grandstand, although this can be costly if transparent and must be able to resist high wind loads. Ultimately a compromise has to be made based on weather modelling.

Stadium use – can affect the type of ancillary rooms to be provided within the grandstand in addition to change rooms, announcer rooms, drug test room, etc.

Ancillary rooms can include sporting groups offices, meeting rooms, club rooms, media rooms and function rooms. It is typical to utilise the area under the tiered seating for storage due to low headroom and lack of natural light.

3. Cost

Synthetic track surface – this is a specialised item normally requiring nominated sub-contractor status. Supplier/installers include Mondo, EPO-KEM, Sports Technology International, Rephouse plus others. Costs range from \$70/m², which is suitable for school level facilities and up to \$120/m² for international competition standard. This rate allows for the synthetic surface only.

“ This facility provides a permanent athletics facility for WA that is capable of functioning as the venue for a range of event standards and certified by the IAAF. ”

Lighting – this is another specialist item normally requiring nominated sub-contractor status. Cost depends on the level of luminance (lux). Typically, 200 to 500 lux is sufficient but if TV coverage is required, 1,500 lux is not uncommon. However, it is possible to size the power supply and lighting head frames for additional light fixtures to enable the upgrade to a higher lux level in the future. Also careful coordination between camera locations and lighting poles is required to avoid glare. Supplier/installers include Musco, Sylvania, Versalux plus others. A budget allowance in the order of \$2.5 million covers 6no lighting fixtures (providing 500 lux), masts, foundations, cabling, all switchgear and a dedicated transformer.

Grandstand – for a 2,000 seat tiered grandstand constructed from pre-cast concrete with 85% weather coverage and ancillary rooms for offices, club rooms, drug testing rooms, announcers room and function suite together with change rooms, the construction cost equates to approximately \$5,800/seat.

Timing equipment – the extent of equipment required depends on the level of the facility. For international competition, equipment can either be bought or hired, although expensive timing equipment needs to be stored in a secure location. Suppliers include Swatch and The House of Brook plus others. Budget allowances are advised for the following equipment: main timing camera \$40,000, wind gauge \$5,000, false start system \$55,000, portable infield display board \$5,000, plus \$20,000 should be included for cabling and conduits. Wireless systems are available but not widely used due to concerns about data loss.

4. Maintenance/Cost In Use

Watering – all areas of natural grass need to be reticulated. If the infield is used as a competition surface (athletics, soccer, rugby, etc) it is likely to require sub-soil drainage. Some of the turf and sub-strata can be quite specialised, requiring it to be 'turf washed' prior to being laid. Where available, a bore system is a cost efficient method of watering, otherwise underground tanks need to be very large and may have to be constructed on-site in concrete, which can be expensive. Furthermore, if water is stored for long periods it needs to be treated prior to being reticulated. This may mean expensive UV or chlorine treatment systems. Sub-soil watering is an efficient in-use option but some operators dislike it as they cannot see if a pipe/nozzle is broken until the turf begins to die.



Artificial turf – can be used around highly trafficked areas, such as around the long jumps and athlete waiting areas. It is relatively maintenance free and costs around \$80/m² for a good quality installation.

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Energy consumption – the infrequent use of the facility can extend payback periods for ‘green initiatives’ such as water harvesting and photovoltaic cell installations to such a degree that they become unviable.

Day use of the stadia consumes minimal energy but night use is energy intensive due to high levels of luminance over large areas. Certain light suppliers provide ‘green’ light fixtures which use less energy than others, although capital cost should be modelled against maintenance costs. Interestingly, as the light fixtures age, the amount of energy they use increases to compensate for dirt accumulating on the lens. Competition level facilities may need an on-site power backup facility in the event of a supply failure. This is usually by means of an external tap-in point connected to a portable gen-set brought in specifically for competition use.

Sports equipment – if the facility is new rather than refurbished, new equipment is likely to be required. The list depends on the number and diversity of events held but can include: hurdles, javelins, hammers, discus (including their respective stands), portable cages, jump pit covers, pole vault stands, landing mats and batons. One should not overlook the requirement for measuring tapes, markers, scales, sand rakes, fold-up chairs and tables, sun shelters, starting blocks and podium rostrum. Thought should be given to transporting all this equipment out of storage to use on site.



State Hockey Centre, Sydney Olympic Site

5. Procurement

Nominated sub-contractors – due to their specialist nature it is common to procure arena lighting, synthetic track surface and sports timing equipment as direct works and nominate to the main contractor once awarded.

Duration – this depends heavily on the extent of siteworks required to level the site as the track tolerances are very stringent.

This project required 80,000m³ of bulk excavation to level the site, increasing

the project’s duration by approximately three months. This was somewhat moderated through the use of pre-cast concrete in the grandstand seating plats, panels and raking beams. However, this comes at a premium due to the higher quality assurance procedures and transportation costs, which is estimated to add approximately 5-7% on the cost of the grandstand. This resulted in an overall duration of 16 months for \$29 million expenditure.

Project information provided with consultation from Department of Sport and Recreation.

Project Profile

**WA Athletics Stadium,
Floreat, Perth, Western Australia**



Image: CHBW

Client – Department of Sport & Recreation

Architect – Cox Howlett + Bailey Woodland

Project Cost – \$29 million

Completion Date – May 2009

Project Description – the project provided a permanent athletics stadium for Western Australia capable of functioning as the venue for a range of event standards and certified by the IAAF. Its 2,000 seat grandstand incorporates areas for VIP viewing, office and administration duties, specific offices for Athletics WA, as well as showers/WC’s and equipment storage. A further 8,000 spectators can be accommodated on the grassed embankments surrounding the 400m athletics track. All grassed areas are reticulated with recycled water to comply with current ESD initiatives. Stadia lighting is designed to achieve 500 lux with the power infrastructure to achieve 1,000 lux. A super-graphic is incorporated into the forecourt paving and front elevational wall.

Benefit to Client – estimating the construction cost early in the design appraisal process enabled the client to successfully source the appropriate level of funding. Accurate ongoing cost advice was essential to maintain the client’s capped budget.

Sports Specialists

Whether developing elite sporting facilities that are fully compliant with national sporting codes, or recreational facilities at a regional or local level, the success of the redevelopment will be underpinned by the knowledge and experience of a consultancy team. This team must possess capability and commitment coupled with a successful track record in developing and delivering sports facilities. Davis Langdon’s specialist construction and property consultants have been instrumental in the delivery of multiple sporting projects across Australia from initial feasibility studies, briefing and business case development to managing all aspects of development and delivery.

Our innovative approach is based on a detailed understanding of the sector. Our specialist consultants appreciate the broad range of technical standards associated with sports and the vast spectrum of stakeholders that make up this exciting and vibrant sector. Our skill is in translating these standards and stakeholders interests into measurable value from a project perspective and this detailed insight is brought to all projects. Our consultancy approach is based around proactive and collaborative problem solving providing best value solutions.

If you are considering undertaking a sports and recreation redevelopment and would like to talk to one of our specialist consultants, feel free to contact Paul Spray.



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