KPMG

Office of Commonwealth Games

Coordination

Economic Impact Study of the Melbourne 2006 Commonwealth Games

Post-event analysis

October 2006
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Contents

1 Executive Summary

1.1 Overview

KPMG was engaged by the Office of the Commonwealth Games Coordination ('OCGC') to project the direct and indirect economic impact of Melbourne hosting the 2006 Commonwealth Games for Victoria.

The 2006 Melbourne Commonwealth Games ('the 2006 Games') was anticipated to be the largest sporting and community event in Victoria's history, and was expected to provide substantial economic benefits similar to those achieved in Manchester as a result of hosting the 2002 Games.

This report primarily addresses the quantitative impacts flowing from the 2006 Games and makes some general observations as to the broader qualitative aspects of the event.

This is the second study into the economic impact of the 2006 Games, the first being based on expectations of benefits. This report broadly follows the same approach as the initial study, however where estimates were used previously, actual results are now factored in.

1.2 Key results

Our analysis suggests that:

- The total expenditure associated with the 2006 Games in Victoria was around $2.9 billion.
- In terms of the impact on the Victorian economy, using a Computable General Equilibrium ('CGE') modelling approach, the 2006 Games was estimated to result in:
  - An increase in Gross State Product ('GSP') of around $1.6 billion over a 20-year period, with around half of the impact occurring in the year of the Games; and
  - Employment of around 13,600 jobs (in FTE terms).

1.3 Nature of analysis

This report does not attempt to evaluate all the qualitative impacts of hosting major events. As evidenced by the experience of cities which have hosted major events and the competition for securing hosting rights, cities recognise the broad ranging and catalytic impact of very large events on their population and infrastructure.

The potential offered by major events in defining or renewing the international profile of a city is widely recognised. The flow on effects of this profile in terms of investment success, tourism and community confidence is significant. These flow on effects, some of which contribute to economic success are difficult to assess and even more difficult to quantify in a study of this nature. This study focuses on those quantifiable direct and indirect impacts, but also broadly discusses the benefits to Victorian businesses from hosting the Games directly and any expected benefits that are anticipated to accrue to them.

In terms of quantitative impacts, while the 2006 Games was held over twelve days, the full economic impact on the Victorian economy is spread over time and can be broadly split into three phases:

- ***Pre-Games impact*** – Impacts first start to occur as the region prepares its bid for the event, but become more significant after the event is awarded. These impacts mainly relate to the investment and other preparatory activities required to stage the 2006 Games. In some cases, tourism could also start to pick up in advance due to the higher profile of the host city;
- ***Games impact*** – This relates to the impact of the 2006 Games and the associated events immediately surrounding them; and
- ***Post-Games impact*** – The longer-term impact, can last for a significant period of time after the 2006 Games. This mainly relates to post-Games tourism, business and infrastructure effects.

A Computable General Equilibrium ('CGE') modelling framework was utilised, with the data being entered into a CGE model of the Victorian economy. In the KPMG pre-Games study, both Input-Output and CGE modelling frameworks were employed, as both frameworks incorporate approaches that allow analysis of mega events like the 2006 Games.

For the purposes of this study however only a CGE modelling framework has been utilised, due to the combination of expected short-run and long-run influences on the Victorian economy.

Gross spending, which includes all direct and indirect expenditure associated with the event, was utilised for the CGE modelling.

Table 1.1 outlines the level of expenditure for each spend type, including both public (Government) and private expenditure.

Gross expenditure is utilised in the CGE modelling on the basis that the CGE model includes constraints on the economy and therefore allows for the opportunity costs associated with the expenditure to be factored into the analysis.

Table 1.1
Spend types associated with 2006 Games (nominal dollars)

Spend item	Gross spend $'000
Total construction	***1,524,731***
Initial bid costs	6,100
Commonwealth Government security costs	79,100
Local Government operational costs	8,125
Spending on cultural programs[1]	13,879
Other operating costs	831,152
Total operational and miscellaneous	***938,356***
Pre-event tourism	2,900
Domestic event tourism[2]	75,047
International event tourism	172,660
Post-event tourism	1,761
Total tourism	***252,368***
Games driven events	7,501
Sponsorship expenditure[3]	190,200
Total business	***197,701***
Total	**2,913,157**

1 Includes the Cultural program budget and Local Government contributions
2 Domestic event tourism is net of 'switching' – i.e. it excludes expenditure from Regional Victorians and those in metropolitan Melbourne who did not forgo a holiday outside of Victoria to attend the 2006 Games
3 Represents additional sponsorship expenditure above the sponsorship revenue of $95.1 million contained within 'Other operating costs'
Note: The total has not been adjusted to reflect present value differences for spends occurring in different years, nor allocations to direct imports
Source: KPMG, OCGC, Quantum Research

In the context of this analysis, our estimate of the economic impact of hosting the 2006 Games is presented in relation to the direct impact – the jobs (in Full Time Equivalent 'FTE' terms) and incomes (returns to labour and capital, measured as value added – or contribution to GSP) associated with the industries in which the expenditures occur (that is, for visitor expenditure,

the jobs in the accommodation and restaurants sector, in transport, in the meals and in the construction sector).

1.4 Economic impact of 2006 Games

The results of our CGE analysis for Victoria are provided in Table 1.2[1]. Our analysis suggests that the impact of the 2006 Games was:

- An increase of **GSP** in the order of $1.6 billion**; and**
- An increase in **employment** of approximately **13,600 jobs** (FTEs).

Table 1.2
Calculation of Net Economic Impacts using CGE framework

Item	NPV
Impact on GSP in Victoria ($M 2006)	$1,629
Increase in Employment in Victoria	13,584

Source: KPMG, Burgan modelled results using MMRF

It should be noted that the employment figures represent full time equivalent measures. In the case of events such as the 2006 Games, and certainly in the period in which the event occurs, many of the employment opportunities manifest as increases in over-time or in short term casual positions. Accordingly, incorporated within the 13,600 FTE jobs, it is estimated that there were over 22,000 employment opportunities created in 2006 alone (most of which were casual positions or overtime).

CGE analysis allows activity to expand in 2004-2006, but this must be financed in subsequent years. The bringing forward of activity is beneficial in a present value context.

In short, the positive impact of the Games on the Victorian economy is derived from two major effects:

- the external money input into the economy of Victoria through tourist visitation, through sponsorship and other "export" equivalents; and

- the bringing forward of the activity associated with the facilities investment required to undertake the Games.

We contend the modelling approach has generally been conservative and the results of this study are similar in orders of magnitude to other similarly framed mega event studies.

[1] The CGE modelling has been undertaken using the Monash MRF modelling framework, using long-term closures for the construction and operating expenditures and short-term closures for the impacts relating to visitor spend.

1.5 Business benefits

Victorian businesses benefited from Melbourne hosting the 2006 Commonwealth Games through a range of business opportunities and initiatives.

This study has not attempted to quantify potential business impacts from the 2006 Games, and has not therefore been included in the economic modelling. Alternatively, we briefly outline elements of the business program undertaken for the 2006 Games.

In particular, five initiatives established through the Victorian Government's comprehensive business leveraging strategy, the *Commonwealth Games Business Benefits Program,* assisted Victorian businesses through:

- connecting businesses with Games supply opportunities;
- preparing businesses to benefit from, and ensure smooth operations during the Games;
- networking and business matching events with international business people during the Games;
- promoting their capabilities to other major international events through inward delegations and trade missions; and
- showcasing and promoting the Victorian sports and events management, design, and agriculture and food industries to international and interstate business people during the Games.

1.6 Comparison with pre-Games report

The following table provides a high-level comparison with the outcomes of the KPMG pre-Games report.

Table 1.3
Spend types associated with 2006 Games (nominal dollars)

Spend item	Post-Games	Pre-Games	Difference[1]
Inputs			
Construction ($'000)	1,524,731	1,478,923	**45,808**
Other operating costs ($'000)	831,152	937,100	**(105,948)**
Domestic event tourism expenditure[2] ($'000))	75,047	48,500	**26,547**
International event tourism expenditure ($'000)	172,660	100,200	**72,460**
Games driven events expenditure ($'000)	7,501	5,807	**1,694**
Sponsorship expenditure[3]($'000)	190,200	218,000	**(27,800)**
Gross Expenditure ($'000)	*2,913,157*	*2,895,021*	***18,136***
Outputs			
NPV Impact on GSP in Victoria ($'000)	1,629,000	1,538,000	**91,000**
Increase in Employment in Victoria	13,584	13,514	**70**

1 Total / difference does not match sum of individual items due to rounding
2 Domestic event tourism is net of 'switching' – i.e. it excludes expenditure from Regional Victorians and those in metropolitan Melbourne who did not forgo a holiday outside of Victoria to attend the 2006 Games
3 Represents additional sponsorship expenditure above the sponsorship revenue of $95.1 million contained within 'Other operating costs'
Note: The total has not been adjusted to reflect present value differences for spends occurring in different years, nor allocations to direct imports
Source: KPMG, OCGC, Quantum Research

2 Introduction

2.1 Project objectives

KPMG was engaged by the Office of the Commonwealth Games Coordination ('OCGC') to project the direct and indirect economic impact of Melbourne hosting the 2006 Commonwealth Games on the Victorian economy.

This is the second study into the economic impact of the 2006 Games, the first being based on expectations of benefits. This report broadly follows the same approach as the initial study, however where estimates were used previously, actual results are now factored in.

The 2006 Melbourne Commonwealth Games ('the 2006 Games') was the largest sporting and community event in Victoria's history, and was expected to provide substantial economic benefits similar to those achieved in Manchester as a result of hosting the 2002 Commonwealth Games.

The outcomes from the KPMG pre-Games study are presented in Appendix B which compares estimated outcomes to actuals.

2.2 Scope

This report only addresses the quantitative impacts flowing from the 2006 Games.

The quantitative impact relates to the economic impact of the event on the Victorian and Australian economies. It is important to draw a distinction between the financial impact of hosting the 2006 Games and the wider economic impact of the Games.

The financial impact of the 2006 Games relates specifically to the budgetary balance of the host city's government, and whether the financial costs of hosting the Games can be met by the revenues directly generated from Games events. The economic impact, on the other hand, relates to the wider effects of the 2006 Games on the general economy arising from associated factors such as increased tourism and improved infrastructure.

The key quantitative impacts generated by the 2006 Games relate to:

- Games activities;
- Construction activities;
- Visitor effects; and
- Business effects.

KPMG have relied on the information prepared by OCGC and subsequently audited by the Victorian Auditor General on the cost of hosting the 2006 Games.

Estimating visitor effects is more challenging. It is understood holding events like the 2006 Games should create increased travel to Melbourne and other Australian regions in terms of:

- Pre-Games visitors,

- Games visitors; and
- Induced tourism resulting from the Games profile.

Quantum Research was engaged to conduct research amongst domestic and international visitors and participants during the 2006 Games to provide profile and activity information to feed into the Economic Impact Study.

The economic impact was determined by using Computable General Equilibrium ('CGE') modelling. Mr Barry Burgan of Economic Research Consultants undertook the modelling for this assignment. The economic impact results are presented in both total and net present value ('NPV') terms. NPV impacts have been determined using a real discount rate of 7% and are presented in 2006 dollars. The discount rate reflects the notional opportunity cost of expenditure by the Victorian Government.

2.3 Structure of report

The report includes the following Chapters:

- Background information regarding the 2006 Games;
- An overview of the business and economic impacts flowing from the 2006 Games, including:
  - Operational;
  - Construction;
  - Tourism; and
  - Business impacts.
- Results of the modelling of the impact of the 2006 Games, on the Victorian and Australian economies; and
- A brief review of the economic impact flowing from other major events.

2.4 Data sources

In undertaking the analysis, KPMG relied on the use of the following data sources:

- Capital works and operating cost information from OCGC;
- Bureau of Tourism Research ('BTR') data, including:
  - International Visitor Survey ('IVS');
  - National Visitor Survey ('NVS');
- Specific reports detailing the spends of International and Domestic Tourists in 1999;
- Melbourne 2006 Commonwealth Games Visitation Research Report, June 2006 prepared by Quantum Research; and
- 2004 Commonwealth Youth Games Economic Impact Assessment, January 2005 prepared by La Trobe University, Bendigo

KPMG consulted a variety of other reference material, all of which is sourced within the report.

2.5 Disclaimer

2.5.1 Inherent Limitations

This report has been prepared as outlined in Section 2.2 of this report. The procedures outlined in Section 2.2 constitute neither an audit nor a comprehensive review of operations.

No warranty of completeness, accuracy or reliability is given in relation to the statements and representations made by, and the information and documentation provided by, the Office of Commonwealth Games Coordination management and personnel consulted as part of the process.

KPMG have indicated within this report the sources of the information provided. We have not sought to independently verify those sources unless otherwise noted within the report.

KPMG is under no obligation in any circumstance to update this report, in either oral or written form, for events occurring after the report has been issued in final form.

The findings in this report have been formed on the above basis.

2.5.2 Third Party Reliance

This report is solely for the purpose set out in Section 2.2 of this report and for the Office of Commonwealth Games Coordination's information, and is not to be used for any other purpose or distributed to any other party without KPMG's prior written consent.

This report has been prepared at the request of the Office of Commonwealth Games Coordination in accordance with the terms of KPMG's engagement letter/contract dated 3 January 2006. Other than our responsibility to the Office of Commonwealth Games Coordination, neither KPMG nor any member or employee of KPMG undertakes responsibility arising in any way from reliance placed by a third party on this report. Any reliance placed is that party's sole responsibility.

3 2006 Commonwealth Games

3.1.1 Breadth of Games

Melbourne hosted around 5,770 athletes and team officials from 71 nations and territories for the 2006 Games. Over two million spectators attended the 2006 Games sporting events, a new Commonwealth Games record[2]. The cultural program *Festival Melbourne 2006* attracted a further two million spectators, and 81,000 attended regional festivals in Ballarat, Bendigo, Geelong and Moe[3].

The sports that were contested included:

- Aquatics
- Athletics
- Badminton
- Basketball
- Bowls
- Boxing
- Cycling
- Gymnastics
- Hockey
- Netball
- Rugby 7s
- Shooting
- Squash
- Table Tennis
- Triathlon
- Weightlifting

The 2006 Games had one village that housed both the athletes and team officials, located on a 20-hectare site in the inner city suburb of Parkville.

The majority of the sports venues were located along the Yarra River within the city precinct and are of world-class standard. The Opening Ceremony, Athletics competition and Closing Ceremony was held at the Melbourne Cricket Ground.

3.1.2 Venues

The vast majority of venues for the 2006 Games Sports Program had already been built and have hosted major events. However, some of these facilities were identified as needing either an upgrade or redevelopment to host the events associated with the 2006 Games.

A total of $1.03 billion was spent on upgrading and redeveloping those facilities deemed necessary (excluding the Games Village).

All the venues hosting events for the Sports Program were chosen in consultation with the Victorian Government and all relevant national and state sporting bodies. Many had the capability of hosting a number of different sports and this was incorporated into the schedule of events.

[2] Melbourne 2006 Commonwealth Games, Special Purpose Financial Report, page 13
[3] Ibid

Table 3.1 2006 Games venues	
Venue	**Events**
Melbourne	
Docklands	Walk
MCG	Opening & Closing Ceremonies, Athletics, Marathon (start / finish)
Melbourne Exhibition Centre	Badminton, Boxing and Weightlifting
Melbourne Gun Club	Clay Target Shooting
Melbourne International Shooting Centre	Small Bore and Pistol Shooting
Melbourne Sports and Aquatic Centre	Aquatics, Squash and Table Tennis
Rod Laver Arena (Melbourne Park)	Gymnastics
Royal Botanic Gardens Circuit	Cycling Road Race
St Kilda Foreshore and Beach Road	Triathlon and Cycling Time Trial
State Lawn Bowls Centre	Lawn Bowls
State Mountain Bike Centre Development	Mountain Bike Cycling
State Netball and Hockey Centre	Netball preliminaries and Hockey
Telstra Dome	Rugby 7s
Vodaphone Arena (Melbourne Park)	Basketball Finals, Track Cycling and Netball Finals
Regional Victoria	
Ballarat Basketball Stadium	Basketball Preliminaries
Bendigo Basketball Stadium	Basketball Preliminaries
Geelong Arena	Basketball Preliminaries
Traralgon Sports Stadium	Basketball Preliminaries
Welsford Rifle Range	Full Bore Shooting
Source: www.melbourne2006.com.au	

Further detail regarding the capital works projects undertaken for the 2006 Games is provided in the following Chapter.

4 Actual impacts

4.1 Introduction

The support of events has become a major aspect of the tourism program of all states in Australia.

While the 2006 Games was held over twelve days, the full impact on the Victorian economy will be spread over time and can be broadly split into three phases:

- ***Pre-Games impact*** – Impacts first start to occur as the region prepares its bid for the event, but become more significant after the event is awarded. These impacts mainly relate to the investment and other preparatory activities required to stage the 2006 Games. In some cases, tourism could also start to pick up in advance due to the higher profile of the host city;
- ***Games impact*** – This relates to the impact of the 2006 Games and the associated events immediately surrounding them; and
- ***Post-Games impact*** – The longer-term impact, can last for a significant period of time after the 2006 Games. This mainly relates to post-Games tourism and infrastructure effects.

This chapter outlines construction, operational, tourism and business impacts associated with these phases with this in mind. As this report does not attempt to quantify business impacts, these are described here only briefly to ensure a comprehensive description of overall impact.

4.2 Operational impacts

The total operational and miscellaneous spend associated with the 2006 Games is outlined in Table 4.1.

Table 4.1
Operational and miscellaneous spend in Victoria due to the 2006 Games (nominal dollars)

Budget item	Amount ($M)
Miscellaneous spend	
Initial bid costs	6.1
Commonwealth Government security costs	79.1
Local Government operational costs	8.1
Spending on cultural programs	13.9
Other operating costs	831.1
Total	**938.3**

Source: OCGC

4.3 Construction impacts

Prior to being awarded the rights to host the 2006 Games, Victoria already maintained a considerable level of infrastructure necessary to host the Games. Accordingly, a significant proportion of the capital works associated with the 2006 Games related to augmenting and replacing existing infrastructure.

As noted earlier, in assessing the economic impact of the 2006 Games, it is necessary to first determine whether expenditure is a direct result of hosting the 2006 Games or whether it would have been incurred anyway. In some instances, there was some suggestion that the capital works may have occurred, but at a later date. In this instance, the Victorian economy still receives an economic benefit in the form of brought forward expenditure. Our analysis assumes that all of the capital expenditure has been undertaken due to the 2006 Games on the basis that:

- there is no substantive evidence suggesting that the capital works expenditure would have been undertaken anyway; and
- due to this uncertainty, there would be a considerable degree of arbitrariness implicit in any assumptions relating to brought forward capital expenditure.

Table 4.2 outlines construction activity and estimate expenditure associated with hosting the 2006 Games[4].

Table 4.2
Construction activity in Victoria due to the 2006 Games (nominal dollars)

Capital project	Amount ($M)
Yarra Precinct Infrastructure[1]	35.4
Games Venues	
Olympic Park Athletics Track Replacement	2.7
State Netball and Hockey Centre Pitch Replacement	27.7
State Mountain Bike Centre Development	2.4
Melbourne Sports and Aquatic Centre (Stage 2)	66.6
Lawn Bowls, State Soccer Centre and Training Velodrome	20.0
Melbourne Gun Club	0.2
Melbourne International Shooting Centre	1.8
Welsford Rifle Range	0.8
Vodaphone Arena	64.0
Traralgon Sports Stadium	1.8
Ballarat Basketball	0.5
Bendigo Basketball Stadium	2.0
Geelong Arena	1.2
MCG	
Athletics Track	23.3
Northern Stands Redevelopment	777.0
OCGC Office Fit out	0.8
Village costs	496.4
Total[2]	**1,524.7**

[1] Yarra Precinct includes the MCG / Birrarung Marr Bridge, Jolimont Station minor works and Yarra Precinct public lighting upgrade
[2] Total does not match sum of individual items due to rounding
Source: OCGC

[4] This table incorporates both the total government and private capital expenditure attributable to the 2006 Games.

4.4 Tourism

Two types of increased travel were modelled:

- Increased travel to Victoria by foreigners;
- Increased travel to Victoria by residents of other states; and
- Victorian residents who chose to holiday in Melbourne instead of holidaying outside of Victoria.

The 2006 Games was expected to give rise to increased international travel to Australia for three reasons:

- Pre-Games visitors (such as officials, sponsors, athletes, spectators, etc.);
- Games visitors; and
- Induced tourism, resulting from Victoria's Games profile.

While the first two types of visitors are confined to their respective phases, the last type of travel is assumed to be a feature of all three phases.

The estimation of tourism effects is largely based on a report drafted by BTR (which is now part of Tourism Australia)[5]. Estimates in the report were based on a Delphi survey of a Panel of Experts. We note that the survey was undertaken at a time when SARS and international terrorism events were significantly impacting on international tourism to Australia. Accordingly, given that we have made no adjustments to the BTR forecast for this, our estimates can be considered conservative.

The overall size of the estimated travel effects due to the 2006 Games are described below.

4.4.1 Pre-Games visitors

The BTR report suggests that pre-Games impacts would be minimal and confined to pre event expenditure associated with athletes and officials.

On the basis of advice from OCGC, we have incorporated the estimated expenditure of $2.9 million generated by the Pre-Games Training Camps during February/March 2006. The estimated expenditure is based on 1,400 athletes and officials attending the Pre-Games Training Camps with an average daily spend of $180. This estimate excludes the official pre-Games training hosted from the Village.

4.4.2 Games visitors

Quantum Market Research conducted research amongst domestic and international visitors and participants during the 2006 Games to provide profile and activity information to feed into the Economic Impact Study.

[5] Potential tourism impacts of the 2006 Melbourne Commonwealth Games, Bureau of Tourism Research, July 2003.

The research provided information on the following areas:

- estimates of visitation to the 2006 Games (split by origin and visitor type);
- profile of visitors including:
  - origin;
  - purpose of visit to Melbourne (for example spectator, media, competitor);
  - average length of stay and accommodation type;
  - ticket purchase behaviour;
- estimates of visitor expenditure; and
- the extent to which visitors changed or tailored their trip to the 2006 Games (by bringing trip forward or delaying trip to coincide with the Games).

Quantum Market Research conducted this research through questionnaires administered to various audiences of interest at a selection of competition and non-competition venues during the 2006 Games period.

4.4.2.1 Visitor numbers

Table 4.3 outlines Quantum Market Research's estimates of visitor numbers due to the 2006 Games.

Table 4.3
Visitor number estimates

Visitor Group	Estimated population
Spectators, visitors, business	
Overseas	57,010
Interstate	60,125
Regional Victoria	37,035
Metropolitan Melbourne foregoing holidays	3,763
Officials	
For team	71
For individuals	2,161
Athletes	3,706
Media	2,713
Total	**166,513**

Source: Quantum

4.4.2.2 Visitor spend

The estimated visitor spends associated with interstate and international visitors, along with those people from Metropolitan Melbourne foregoing holidays (outside of Victoria) to attend the Games are outlined in Table 4.4.

The estimated visitor spends represents the gross spend adjusted for "switching". "Switching" refers to expenditure in a time or place:

- *Time switching*, refers to a delay or bringing forward of (previously) intended travel to attend an event, resulting in lower visitation before and/or after an event for a host region; and
- *Destination switching* refers to travellers changing the travel destination of intended travel to attend an event of interest in another region.

An adjustment is made for switching on the basis that expenditure of this nature would have occurred anyway and is therefore not directly attributable to the event. That is, the expenditure of Regional Victorian visitors and those people from metropolitan Melbourne who did not forgo holidays outside of Victoria to attend the 2006 Games is not included.

Table 4.4
During event visitor expenditure estimates by visitor group (nominal dollars)

Visitor group	Non-package spend ($M)	Package spend ($M)	Total spend ($M)
Overseas visitors	128.9	24.1	153.0
Interstate visitors	63.9	7.3	71.2
Metro Melbourne foregoing holidays	1.9	-	1.9
Media (interstate)	0.9	1.2	2.0
Media (overseas)	2.8	3.9	6.7
Officials (overseas)	3.0	6.7	9.7
Athletes (overseas)	3.2	-	3.2
Total[1]	**204.7**	**43.1**	**247.7**

[1] Total does not match sum of individual items due to rounding
Source: Quantum

4.4.3 Post-Games visitors

The tourism industry is in constant need of positioning or repositioning in a hotly contested global market. Destinations that fail to undertake constant promotional campaigns in their target markets risk losing market position, or going out of fashion. Major events help address this by increasing international visitor awareness of the destination.

By increasing international visitor awareness, the international exposure afforded Victoria by the successful staging of the 2006 Games may result in increased visitation above the underlying trend. This potential increase in visitor numbers is contingent on the skilled exploitation of the marketing opportunity that the 2006 Games provided. Visitor awareness could lead to increased tourism either by:

- the exposure of Victoria through various forms of media to international markets; and
- people who would not have visited Australia if it were not for the 2006 Games, who were pleasantly affected by their experience and motivated to return at another time and explore Victoria's tourist attractions.

Due to the difficulties in estimation, we have not addressed impacts of the 2006 Games on the level of domestic and intrastate tourism in Victoria by:

- encouraging interstate residents to holiday in Victoria; and
- encouraging Victorian residents to holiday locally rather than interstate.

These objectives are targeted through domestic tourism campaigns and the economic flow on effects may be significant.

4.4.3.1 International tourism impacts

Australia is distinct from other international tourism markets. In an Australian context, the most definitive comparison with the 2006 Games is the Sydney Olympic Games ('SOG').

Table 4.5 below outlines:

- estimates undertaken by the Tourism Forecasting Council in 1998 for the impact of the SOG on **international** tourism post event[6]; and
- BTR survey results in relation to the influence of the Olympics on travelling decisions for **international** visitors.

The BTR survey results implicitly include people who would not have visited Australia if it were not for the SOG Games, who were pleasantly affected by their experience and motivated to return at another time and those encouraged to return by the media exposure

Table 4.5
Estimated versus actual impact of SOG on international visitor numbers

Year	Estimated impact on international visitor numbers	Actual impact on international visitor numbers
2000	5.4%	5.0%
2001	7.1%	1.0%
2002	4.4%	0.6%

Source: TFC, BTR

Significantly, the **actual** impact of the event was materially **lower** than the predicted impact.

As a conservative assumption, we have estimated that the impact of the 2006 Games in terms of visitors affected by either attending the 2006 Games or the media exposure by reference to the size of the SOG's TV audience and the impacts outlined in Table 4.5.

It is noted that the period following the SOG was turbulent for the tourism industry due to world events and that this may have had some impact on the size of the "Olympic effect".

However, counterbalancing this:

- While the issues impacting on tourism may have reduced the overall **level** of tourism in Australia in 2001 and 2002, it is not clear that this would have impacted on the **proportion** of individuals influenced to travel to Australia because of the SOG; and

[6] Tourism Forecasting Council (1998), *The Olympic Effect*, Canberra

- It could be argued that recent major events in Australia (notably the SOG and 2003 Rugby World Cup) would diminish the increased inducement impact of the 2006 Games.

On this basis, it is reasonable to base the inducement effect on the relative size of prospective TV audiences and the post SOG impact. Assuming that:

- Victoria receives 30% of these visitors[7]; and
- An average per trip spend of $1,728[8]

leads to an anticipated visitor spend directly as a result of the 2006 Games in the order of $1.8 million (in total) for 2007 and 2008.

4.5 Business impacts

Business impacts associated with the 2006 Games will include:

- Events that are "driven" by the 2006 Games;
- Sponsorship expenditure; and
- General business activity.

These are addressed in turn.

4.5.1 Games driven events

A number of conferences, conventions and other sporting events were held in Victoria due to the 2006 Games. We have included the larger events in our analysis, where actual delegate numbers are available. These events are outlined below.

Table 4.6
Events driven by the 2006 Games

Event	Delegate / participant numbers		
	Victorian / Interstate	Overseas	Total
13th Commonwealth International Sport Conference	390	260	**650**
National Conference on Volunteering	304	97	**401**
Australian Conference of Science and Sport	736	101	**837**
Candidate Cities Seminar	0	110	**110**
2005 Pacific School Games	2,170	930	**3,100**
2004 Commonwealth Youth Games[1]	N/A	N/A	**2,013**
Total	3,600	1,498	**7,111**

[1] Split between Victorian / Interstate and overseas delegates not available
Source: KPMG, Tourism Victoria, LaTrobe University

To determine the estimated delegate spends, we used the results of a study instigated by the Melbourne Convention and Marketing Bureau[9]. On the basis of the study results (adjusted for inflation), we have assumed that:

[7] Based on IVS data, Victoria's share of visitor nights for 2003 was around 22%
[8] Based on an average per trip spend in Victoria of $1,374 in 1999 dollars from BTR, adjusted to 2006 dollars.

- Domestic attendees (and their travel party) spend on average $1,712 per event; and
- International attendees (and their travel party) spend on average $3,945 per event.

It should be noted that these estimates are in 2006 dollars.

For the two youth-centred events, namely the 2004 Commonwealth Youth Games and the 2005 Pacific School Games, we have assumed an average spend of $681 per attendee[10], based on results from the study of the economic impact of the Commonwealth Youth Games (adjusted for inflation). The lower figure has been used for these two events as it assumed that young people would be unlikely to spend as much as an adult attendee at a conference.

This results in the following spending profile.

Table 4.7
Events expenditure driven by the 2006 Games (2006 dollars)

Event	Estimated delegate expenditure (derived)		
	Victorian[1] / Interstate ($'000)	Overseas ($'000)	Total ($'000)
13th Commonwealth International Sport Conference	705.6	655.0	**1,360.6**
National Conference on Volunteering	550.0	244.3	**794.4**
Australian Conference of Science and Sport	1,331.5	254.4	**1,586.0**
Candidate Cities Seminar	-	277.1	**277.1**
2005 Pacific School Games	1,478.2	633.5	**2,111.8**
2004 Commonwealth Youth Games[2]	N/A	N/A	**1,371.3**
Total[3]	4,065.4	2,064.6	**7,501.4**

[1] Theoretically, the inclusion of Victorian delegate expenditure may overstate the estimated delegate expenditure for Victoria / interstate. However, there was no differentiation in the data provided and KPMG understands that these delegates were primarily from interstate. This amount is likely to immaterial to the overall expenditure.
[2] Split between Victorian / Interstate and overseas delegates not available
[3] Total does not match sum of individual items due to rounding
Source: KPMG, Tourism Victoria, LaTrobe University

We note that the improved sporting facilities due to the 2006 Games will enable Melbourne to host other significant international sporting events.

For example, pursuant to hosting the 2006 Games, Victoria will host the FINA World Swimming Championships in early 2007. The event will be held across three sites in Melbourne:

- Swimming and Synchronised Swimming will be held at Rod Laver Arena;
- Diving and Water Polo will be held at Melbourne Sports and Aquatic Centre (MSAC), with the Water Polo to be played in the new pool constructed for the 2006 Commonwealth Games and Diving to be held indoors at the MSAC diving pool; and

[9] Melbourne Convention Delegate Study 1999, Centre for Hospitality and Tourism Research, Victoria University.
[10] Economic Impact Assessment prepared by La Trobe University, Economic Research Unit, Bendigo, for City of Greater Bendigo, January 2005. Average spend per attendee based on estimates of total direct expenditure on accommodation ($1.08 million) and cafes and restaurants ($222,000) in Bendigo divided by a total of 2013 visitors, athletes and officials from outside of Bendigo

- Open Water Swimming events will take place at the St Kilda Beach.

The potential impact of this event has not been included in the analysis, as it is unclear whether the staging of this event is a direct result of Melbourne hosting the 2006 Games.

4.5.2 Sponsorship expenditure

Sponsorship revenue flowing to M2006 Corporation from the 2006 Games was estimated to be around $95.1 million.

Sponsors generally undertake additional activities in order to maximise the benefits flowing from sponsorship. Industry standards suggest that sponsors tend to spend 1 to 3 times the amount they pay for the "base" sponsorship. That is, if a sponsor pays a $1 million fee to sponsor an event that sponsor will then spend between $1 million and $3 million to leverage that association via advertising, promotions, internal communications/programs, hospitality etc.

Our assumptions in relation to sponsorship expenditure are outlined in Table 4.8 and were made on the basis of our assessment of the above issues and advice from OCGC.

This estimate is therefore based on the assumption that the additional spending is twice the amount of sponsorship revenue flowing to the M2006 Corporation.

Table 4.8
Sponsorship expenditure driven by the 2006 Games (nominal dollars)

Spend type	Estimated sponsorship expenditure ($M)
Base sponsorship	**95.1**
Additional expenditure by sponsors	**190.2**

Source: KPMG, OCGC

4.5.3 Business benefits

This study has not attempted to quantify potential business impacts from the 2006 Games, and has not therefore been included in the economic modelling. Alternatively, we briefly outline elements of the business program undertaken for the 2006 Games.

4.5.3.1 Commonwealth Games Business Benefits Program

The Victorian Government committed $4 million toward a comprehensive business leveraging strategy – the *Commonwealth Games Business Benefits Program* (the Program).

The Program was officially launched in July 2005 and aimed to maximise the ongoing benefits to Victorian businesses from Melbourne hosting the 2006 Commonwealth Games, through five initiatives:

- Get the Inside Running;

- Be Prepared for the Games;
- Enter the International Arena;
- Showcasing our Best and Fairest; and
- Regional Victoria in the Winners Circle.

The Department of Innovation, Industry and Regional Development (DIIRD) was the lead agency responsible for delivering the Program, in close consultation with the Office of Commonwealth Games Coordination (OCGC). Each initiative is outlined in more detail below.

Get the Inside Running

Get the Inside Running was delivered by the Industry Capability Network (ICN) and aimed to ensure Victorian businesses were well positioned to take advantage of Commonwealth Games procurement opportunities.

The ICN implemented the *Games Industry Link* website to connect Victorian and Australian businesses with Games supply opportunities. Through the website, businesses could register their industry capabilities, view Games supply opportunities and download tender documentation. Once registered, companies were sent email alerts on upcoming supply opportunities that matched their industry capabilities. Over 4,360 companies registered their interest on the website, which received over 33,000 visits in total.

In addition, three ICN staff members were seconded to the Melbourne 2006 Commonwealth Games Corporation to support the implementation of the Victorian Industry Participation Policy (VIPP), which helped identify potential local suppliers for Games contracts (two staff members) and implemented the Games Linkage Program (one staff member).

During the three-year period, the Games VIPP program provided industry access to $900 million worth of opportunities from the overall Games expenditure which exceeded $1 billion. Through this program, ICN assisted Victorian and Australian companies to successfully win local sourcing and import replacement orders valued at $778 million, providing an 87% local content. The $778 million worth of local orders included:

- $256 million from $300 million of M2006 procurement opportunities; and
- $522 million from $600 million of infrastructure opportunities[11].

Be Prepared for the Games (Business Ready)

Be Prepared for the Games or the Business Ready Program was a joint Victorian Government and City of Melbourne program launched in November 2005 to communicate to Victorian

[11] Figures provided in Melbourne 2006 Commonwealth Games Industry Program 2005-06 Annual Report, Industry Capability Network, September 2006. These figures were based on ICN's involvement in procurement. These figures are based on areas of expenditure where ICN had influence, not total operational and infrastructure spend.

businesses the likely impacts of the Games and how they could prepare to benefit from, and ensure smooth operations, during the Games.

The Business Ready Program included three key components:

- **Business Ready Kit** – a kit including information and advice on maximising opportunities for business, traffic and transport guides, workforce planning, safety and security, Commonwealth Games facts and figures, and frequently asked questions. Over 5,000 kits were distributed to local councils, industry groups, businesses located close to Games venues and other stakeholders between November 2005 and March 2006.

- **Business Ready Forums** – six forums held in Melbourne (two), Ballarat, Bendigo, Geelong and Traralgon between November 2005 and February 2006. The forums were hosted by the City of Melbourne (metropolitan) and VECCI (regional) and allowed businesses to hear first-hand about the impacts of the Games and issues related to specific industries. In total, over 1,500 businesses attended the forums.

- **Business Ready Hotline** – a hotline established in November 2005 to provide businesses with information and advice on Games impacts and opportunities, and with copies of the Business Ready Kit. From November 2005 to March 2006, the Business Ready Hotline advised over 1,340 Victorian businesses, with the majority of calls received in February (488), followed by March (388).

Enter the International Arena

Business Club Australia: Melbourne 2006

Business Club Australia: Melbourne 2006 was a joint Victorian (DIIRD / OCGC) and Australian Government (Austrade and Invest Australia) initiative to bring Australian and international business people together for networking and business matching during the Commonwealth Games to increase Australia's trade and inward investment.

The *Business Club Australia: Melbourne 2006* was responsible for:

- 25 international business events throughout 2005 and early 2006 to encourage international businesses to join the Club and visit Melbourne for the Games (2,300 attendees);

- 30 business networking events, including breakfasts focused on key trade and investment markets, regional business events and evening functions focused on industry sectors (5,076 attendees);

- A corporate hospitality program for Business Club members through a corporate suite at the MCG and tickets to other sporting events (788 attendees);

- Access to a business networking and information centre at Champions, Federation Square during the Games;

- A Global Industry Leaders Program through which 48 senior business people were invited and supported to visit Melbourne during the Games. Individual business programs were

developed including Business Club events, corporate hospitality and meetings with relevant Victorian and Australian companies.

Business Club Australia: Melbourne 2006 had over 7,800 members, including 4,804 Australian (2,954 Victorian) and 2,901 international members. The key international markets were India, Pakistan, Malaysia, Singapore, South Africa, China and the United Kingdom.

In June 2006, BCA members were surveyed to assess their views regarding *Business Club Australia: Melbourne 2006*. The results of this survey are summarised in Section 4.5.4.

The impact of this type of initiative is highlighted by the experience of the *Rugby Business Club Australia* associated with the Rugby World Cup in 2003. Analysis by DSRD suggests that hosting the event and the associated leveraging activities resulted in the following outcomes:

- Major orders are anticipated to flow from meetings between UK supermarket (Tesco) and Department Store (Harvey Nichols) buyers and a number of NSW food and beverage suppliers;

- The prospect of potential investment projects valued at just under $2 billion coming to fruition were enhanced through the participation of key company representatives in the match hospitality program;

- 38 sales and 700 leads were generated at the ATS, with potential sales arising from the events estimated at $60 million. The showcase resulted in sales of around $60 million over the 6 to 12 months following the tournament. Due to the national scope of this event, not all of these sales or leads relate to NSW businesses, for example, that this includes at least $1.1 million by Qld ATS companies[12]; and

- A number of investment leads are also being pursued with companies considering NSW as a location for potential projects.

Initial business outcomes[13] confirm that 103 business deals for Australian companies have resulted directly from their RBCA membership and the services provided to members. These sales are worth $236.5 million with many short and longer-term deals being negotiated.

Games Linkage Program

The Games Linkage Program allowed Victorian businesses to promote their capabilities to other major international events through inward delegations and overseas trade missions. The program targeted the following international events:

- Doha 2006 Asian Games;

- Beijing 2008 Olympics;

- Delhi 2010 Commonwealth Games; and

[12] Review of the outcomes of the 2003 Australian Technology Showcase, provided by the DSRD
[13] As at 12 November 2004

- London 2012 Olympic Games.

In 2004/05, the Program facilitated trade missions to China, India, Doha and Dubai to promote Victorian companies working on the Commonwealth Games, and hosted inwards trade missions from Delhi, China, Dubai and Doha. In November 2005, a Sports and Major Events Conference was held in Delhi to promote Victoria / NSW Games capability to the organisers of the Delhi 2010 Commonwealth Games.

Victorian Government Business Hosting

The Victorian Government Business Hosting program aimed to:

- attract visits to Victoria by senior foreign executives of existing or potential international investors;

- provide an opportunity for contact with senior executives of domestic and international companies with which DIIRD has dealings, or to establish initial contact; and

- assist in building relationships between Ministers and/or Departmental officers and key clients.

Melbourne 2006 and the Victorian Government jointly hosted and funded a Games period leveraging program to maximise the benefits to Victoria of hosting the XVIII Commonwealth Games

Business hosting guests were identified though the Department of Industry, Innovation and Regional Development and other business Ministers. The total number of guests entertained under the joint M2006/Victorian Government program was 3,043. DIIRD also conducted a specific program for business guests critical to their priorities which involved an additional 316 guests.

Showcasing our Best and Fairest

The Business of Sport

This initiative was designed to showcase Victoria's sports and event management industry to international business visitors during the Commonwealth Games so as to increase export opportunities. It included:

- **International Sports Facility Management Program** – a six day program in March 2006 involving leading Victorian companies presenting on planning, design, project management, facility establishment, operations and overlay in the context of a major sporting venue.

- **Victorian Institute of Sport –** DIIRD sponsored a Sports Innovations Showcase in March 2006 which showcased Victorian sports technologies, including tours of the VIS' training facilities and a networking lunch. The event was invite only and was promoted to the Australian sports industry, *Business Club Australia: Melbourne 2006* members, Observers Program participants and delegates of the 13th Annual Commonwealth International Sports Conference.

- **Melbourne 2006 Observers Program** – a program offering participants in-depth briefings by Melbourne 2006 and other major event specialists on all aspects of Games planning and staging. Participants also received accreditation or ticketed access to events and an opportunity to meet with Melbourne 2006 suppliers. Over 300 people participated in the Observers Program, including delegations from the Beijing, Delhi, London and the 2014 Commonwealth Games bid cities. The economic benefit of this program is included within the Games period tourist expenditure.

- **Business of Sport Networking Event –** an event run as part of the *Business Club Australia: Melbourne 2006* program. The event provided an opportunity for Victorian sports and event management companies to network with visiting sport industry representatives and Government officials.

- **Science Meets Sport Networking Seminar** – hosted by the Bio21 Institute and the City Melbourne on 13 March at the Bio21 Institute headquarters.

Design

This initiative aimed to promote Victoria's design excellence to international and interstate visitors during the Commonwealth Games, so as to increase the profile of Victoria's design industry. It included:

- **State of Design: Export Ready Seminars –** held in Bendigo, Traralgon, Geelong and Ballarat to help regional design companies start or grow their exports. The seminars included case study presentations from successful Victorian design companies, information on export opportunities and assistance, and networking.

- **Design on the Edge: Showcasing Victoria's Export Ready Design –** a networking event including presentations from six export-ready, young Victorian designers in the areas of architecture, industrial, product, interior and graphic design. Over 80 people attended the event, primarily Victorian designers, design industry representatives, academics and *Business Club Australia: Melbourne 2006* members.

- **Sports and Event Design Victoria Publication –** a comprehensive overview of Victorian design's contribution to the Commonwealth Games and the readiness of Melbourne to host the event. It includes case studies covering the Queen's Baton, major venues like the MCG and Melbourne Sports and Aquatic Centre, and the Commonwealth Games visual identity.

Australian Technology Showcase

The Australian Technology Showcase Exhibition (ATS) was held in March 2006 at the Telstra Dome. It was attended by 1,500 people and showcased 100 Australian-owned technologies across a range of sectors and provided an opportunity for innovative Australian companies to network with business leaders, with the objective of increasing Australia's technology exports.

Regional Victoria in the Winners Circle

Food and Wine Showcasing

An initiative designed to showcase and promote Victoria's agricultural and food industry during the Melbourne 2006 Commonwealth Games, so as to raise the national and international profile of Victoria's industry and increase trade and investment.

- **International Food Events –** networking events held in Singapore, Canada, Leeds and Malaysia in 2005 to promote Victoria's food and wine industry and encourage buyers to visit Melbourne during the Commonwealth Games.

- **Victorian Food Trade Fair and Networking Event –** held during March 2006 at the Victorian Investment Centre, it included a global leaders lunch, a food forum on the global food industry, a food trade fair at which 40 Victorian companies presented their food and agricultural produce, and networking drinks.

- **Victorian Producers Market –** held during March 2006 at the Melbourne Museum Plaza. The Market formed part of the official Melbourne Museum Livesite activity during the Games, and was attended by 97 producers from all Victoria's regions and around 7,000 people.

- **Tasting Victoria Menu –** held during March 2006, the initiative involved hundreds of participating restaurants across Victoria presenting a unique menu prepared with local produce as well as offering a range of Victoria's finest wines.

Regional Business Events

An initiative designed to showcase Victoria's regional industry strengths to visiting international business leaders so as to increase trade and investment. It included:

- **Regional Engagement –** presentations by DIIRD in mid 2005 to the Victorian Government offices and local councils of the Games regional venues about opportunities associated with the *Business Benefits Program.*

- **Traralgon Business Benefits Event –** a business networking lunch hosted by DIIRD in September 2005 in Traralgon to promote the *Business Benefits Program* and opportunities to businesses in the Gippsland region (80 attendees).

- **Geelong Otway Day –** an event promoted through the *Business Club Australia: Melbourne 2006* program, highlighting Geelong's industry strengths and excellent business environment through business case studies, an industry showcase and business networking.

- **Bendigo Business at the Games –** the City of Greater Bendigo was sponsored by DIIRD to host two business events in March 2006 targeting potential investors, buyers and potential partners in the manufacturing, mining, and finance and professional services sectors.

- **Ballarat Business and Trade Day –** the City of Ballarat was sponsored by DIIRD to host a *Ballarat Business and Trade Day* at the Ballarat Mining Exchange in March 2006. The event involved bringing Indian delegates and others to Ballarat for a business showcase and networking lunch. The event was part of the City of Ballarat's broader business program targeting India including an MOU between the City of Ballarat and the Confederation of Indian Industries on greater economic cooperation.

4.5.4 Business Club Australia – results of members survey

In June 2006, ORIMA Research was commissioned by Business Club Australia (BCA) to survey its domestic and international members to assess their views regarding *Business Club Australia: Melbourne 2006* held during the Commonwealth Games 2006. In total, 680 telephone surveys were conducted of domestic members, and 195 online surveys were completed by both domestic and international members.

Overall, the survey found that 66 per cent of respondents were either aware of or had used the services and activities at *BCA: Melbourne 2006.* Of these respondents, 91 per cent rated the service and activities at *BCA: Melbourne 2006* as either 'good' or 'adequate'.

Broad impacts of BCA: Melbourne 2006

The survey sought to determine the broad impacts of *BCA: Melbourne 2006* on the businesses of both domestic and international members.

The key survey results in this area are summarised below:

- 39 per cent of all respondents believed that *BCA: Melbourne 2006* had at least 'some impact' in improving their business networks, with international respondents (29 per cent) more likely to indicate a 'significant impact' on improving their business networks compared to their domestic counterparts (4 per cent);

- Domestic respondents considered the most favourable impacts of *BCA: Melbourne 2006* to be in increasing interstate and international awareness of Melbourne, Victoria and Australia as places to do business, and increasing international awareness of the capabilities of Australian industry;

- 52 per cent of domestic respondents also indicated that they had benefited from *BCA: Melbourne 2006* as they were able to increase their awareness of opportunities available to them internationally;

- Domestic respondents indicated that *BCA: Melbourne 2006* has had at least some impact on their capability to begin, grow and/or sustain exports (28 per cent), and on their capability to attract foreign investment (17 per cent); and

- International respondents considered that *BCA: Melbourne 2006* had a 'significant' impact in increasing their awareness of Australian business opportunities and capabilities (around 25 per cent), and on their likelihood to invest in and/or import from Australia (around 20 per cent).

Export sales

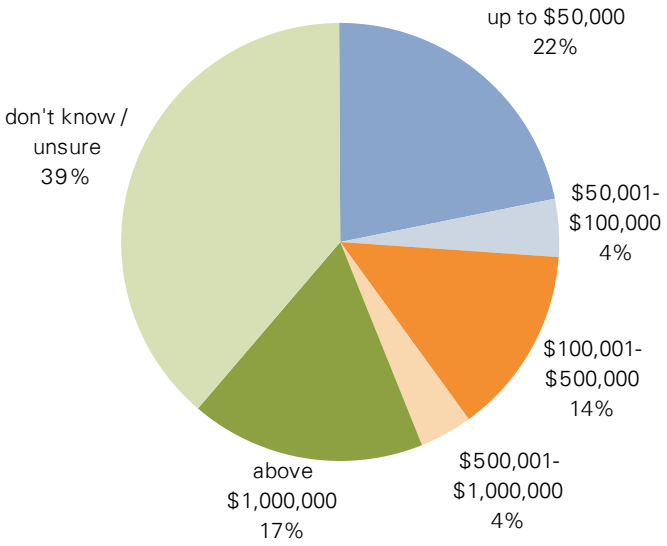
The survey assessed the impact of *BCA: Melbourne 2006* on the export sales of domestic respondents.

The key survey results in this area are summarised below:

- 3 per cent of respondents indicated that they had achieved export sales as a result of *BCA: Melbourne 2006*, and 31 per cent of those who had not, expected to do so in the future;
- 70 per cent of those respondents who expect export sales in the future, indicated that they expect sales to begin within 12 months; and
- More than half of the participating respondents indicated high (31 per cent) or very high (24 per cent) likelihood of these sales eventuating.

Figure 1 below indicates the expected value of the anticipated export sales by participating respondents.

Figure 1: Expected value of export sales resulting from BCA: Melbourne 2006



Business relationships

The survey found that almost a quarter of participating domestic respondents either established, or expected to establish an agency or distribution agreement, joint venture or partnership with an overseas company as a result of their participation in BCA Melbourne 2006.

Foreign investment

The survey sought to determine the impacts of *BCA: Melbourne 2006* on the level of foreign investment in Australia.

The key survey results in this area are summarised below:

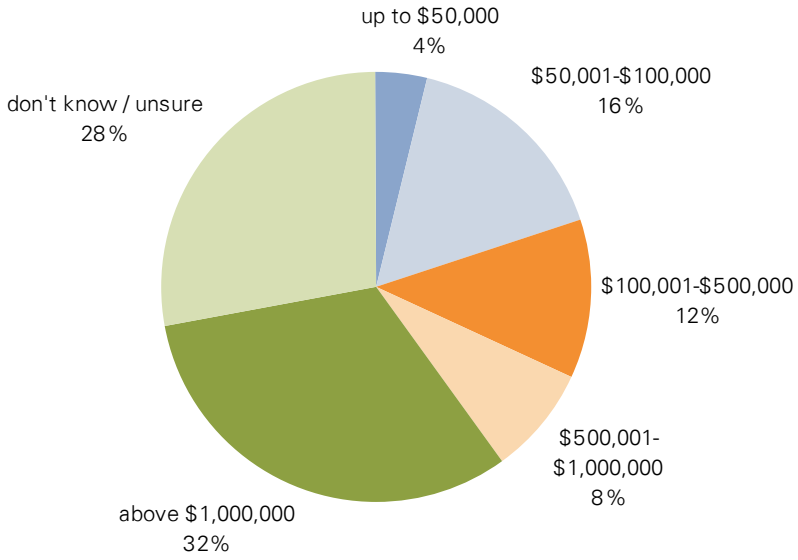
- 25 per cent of survey respondents who indicated that their company was foreign owned had identified a new potential investment opportunity (i.e. joint venture, expansion of existing operations, greenfield operation);

- Domestic foreign owned companies were more likely to expand existing Australian operation, compared to their international counterparts who were more likely to have identified a new or greenfield operation; and

- More than 90 per cent of respondents from foreign owned companies who have identified an opportunity expected a decision on that investment within the next two years, with around one third indicated either a 'high' or 'very high' likelihood of that investment eventuating.

Figure 2 below indicates the expected value of the anticipated export sales by participating respondents.

Figure 2: Expected value of investment in Australia (foreign companies with an identified opportunity)



The figure above shows that almost one third of foreign companies, who had identified an investment opportunity in Australia, expected that investment to be valued at more than $1 million.

Respondents were also asked to estimate the proportion of the total expected investment that would be invested in Victoria. The survey results indicated that 38 per cent of respondents from foreign owned companies anticipated the majority of the total investment to be in Victoria.

5 Economic impact analysis

5.1 Overview

This chapter presents a discussion on modelling frameworks utilised to estimate the economic impact of the Commonwealth Games on the state of Victoria, and presents a summary of the analysis undertaken.

The analysis uses a Computable General Equilibrium ('CGE') model which is commonly used to assess the introduction of new policies, large projects or major events. The specific version of the model that has been applied in a simple framework is the Monash Multi-Regional Forecasting model.

5.2 Modelling framework

5.2.1 Computable general equilibrium models

While many past analyses of events and major events have been undertaken using Input-Output modelling frameworks, this study uses a CGE model due to the size and relative significance of the event. CGE models are economy wide models used to provide an assessment of the impacts throughout the economy of a given policy change or economic shock. They have evolved over the past thirty years as researchers attempted to make general equilibrium models operational and empirically tractable.

As the name suggests, "computable" or "applied" refers to the emphasis of the models as being a practical application, in that with the ever-broadening sphere of economic theory the models are able to accommodate the changes and upgrades in economic thought into their framework. Also this is in reference to the fact that the models are the application of theoretical general equilibrium models that have their basis in algebraic equations; simply they are numeric and based on actual data.

The general equilibrium portion of the description refers to the fact that the models provide a detailed structural picture of the interdependent component (industries, households, investors, governments, exporters and importers) operations of the economy and that theoretically demand is equal to supply therefore providing an equilibrium position.

Most of the development and use of CGE models has occurred in the economic development literature owing to the perceived need for a more complete analysis than that available from a sectoral approach[14]. The history of the use of CGE models for economy wide analysis has been extensively documented and perhaps summarised by the model developers themselves, see for example Dixon, P.B and M.T. Rimmer (2001), "Forecasting, Policy, History and Decomposition: The Monash Model of the Australian Economy", mimeo[15].

[14] Carlson, G., Zilberman, D., Miranowski, J.A., 1993. "Agricultural and Environmental Resource Economics", Oxford University Press, New York.
[15] Available from the Centre of Policy Studies, Monash University

In essence the use of a CGE model provides an indicative measure of the impacts of an event on the formal economy – the impacts on incomes generated, on material and services consumption, on employment, and on macro-economic variables such as inflation and balance of trade. It represents a part (and often a critical part) of a benefit cost assessment, which would include additional non- market benefits and costs (eg development of regional pride, impacts of congestion in the use of public areas etc, improvements in public space etc). In major events, some of these non-market issues can be even more significant than the impacts on the levels of economic activity.

5.3 Outcomes

5.3.1 Overview

The calculation of the potential economic impact arising from hosting the 2006 Games is undertaken in a number of consecutive steps, summarised below. This analysis is an extension of the pre-event evaluation undertaken by KPMG, maintaining a consistent approach for comparison purposes.

5.3.2 Expenditure types associated with 2006 Games

While expenditure on holding the Games, and the expenditure of visitors that occurs specifically with the Games has been discussed in the Section 4, it is the employment and incomes that this expenditure supports that provides a community benefit, and it is this impact that in large part, is a reason for Government's support of special events that occurs nationally and internationally.

Major events are generally supported because of the incremental economic activity that they attract to the host location, which is generally the focus of most economic modelling (i.e. incremental economic modelling of impact). However, it is useful to also understand the total expenditure in that it provides an indication of the total size of an event.

Table 5.1 summarises the different types of spend associated with the 2006 Games, including both public (Government) and private expenditure. The largest proportion of the expenditure is obviously the provision of infrastructure associated with facilities required to conduct the Games.

The spend estimate is relevant for assessing the economic impact through the CGE analysis, with the model incorporating directly assumptions about the need to fund the activity (assuming that the additional expenditure to prepare and undertake the Games will be deficit funded and repaid in future years).

Table 5.1
Spend types associated with 2006 Games (nominal dollars)

Spend item	Gross spend $'000
Total construction	***1,524,731***
Initial bid costs	6,100
Commonwealth Government security costs	79,100
Local Government operational costs	8,125
Spending on cultural programs[1]	13,879
Other operating costs	831,152
Total operational and miscellaneous	***938,356***
Pre-event tourism	2,900
Domestic event tourism[2]	75,047
International event tourism	172,660
Post-event tourism	1,761
Total tourism	***252,368***
Games driven events	7,501
Sponsorship expenditure[3]	190,200
Total business	***197,701***
Total	**2,913,157**

1 Includes the Cultural program budget and Local Government contributions
2 Domestic event tourism is net of 'switching' – i.e. it excludes expenditure from Regional Victorians and those in metropolitan Melbourne who did not forgo a holiday outside of Victoria to attend the 2006 Games
3 Represents additional sponsorship expenditure above the sponsorship revenue of $95.1 million contained within 'Other operating costs'
Note: The total has not been adjusted to reflect present value differences for spends occurring in different years, nor allocations to direct imports
Source: KPMG, OCGC, Quantum Research

5.3.3 Estimation of direct and indirect expenditures

5.3.3.1 Operational and miscellaneous expenditure

Table 5.2 illustrates the estimated spend by year according to the operating budget for the games. The distribution of the expenditures across years has been modelled based on review of expenditure items undertaken in the pre-event analysis, with allocation made proportionally to the distribution used in the pre-games study (for this and all subsequent spend parameters).

Obviously a significant proportion of the operational expenditure is modelled to occur in the year of the 2006 Games.

Table 5.2
Operating and miscellaneous expenditure due to 2006 Games ($M in nominal dollars)

Expenditure item	2002	2003	2004	2005	2006	2007	2008	Total
Organising Company								
Gross Expenditure	10.5	69.6	54.9	105.1	266.6	3.4	0	510.1
OCGC								
Gross Expenditure	4.3	6.5	7.8	9.8	11.8	1.3	0.0	41.5
Other Expenditures								
Public Domain	0.0	0.0	1.4	3.5	34.6	0.1	0.0	39.6
Traffic and Transport	0.0	0.0	0.0	0.0	20.1	0.0	0.0	20.1
Free Traffic and Transport	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Security	0.0	0.0	3.4	5.6	80.9	0.0	0.0	89.9
Other Departments	0.0	2.7	1.1	5.5	14.1	18.3	0.0	41.6
Commonwealth Govt Services	0.0	0.0	0.0	0.0	24.2	0.0	0.0	24.2
Local Council Services	0.0	0.0	0.0	0.0	32.7	0.0	0.0	32.7
Legacy Program	0.0	1.9	1.1	4.9	6.5	0.0	0.0	14.3
Subtotal	14.8	80.8	69.7	141.7	513.8	23.0	0.0	843.7
Miscellaneous spend								
Local Government Spend	0.0	0.0	0.0	2.0	6.1	0.0	0.0	8.1
Initial Bid Costs	6.1	0.0	0.0	0.0	0.0	0.0	0.0	6.1
Fed Govt Security Contribution	0.0	0.0	0.0	19.8	59.3	0.0	0.0	79.1
Cultural Programs	0.0	0.0	0.0	0.3	1.0	0.0	0.0	1.3
Total Misc Expenditure	6.1	0.0	0.0	22.1	66.4	0.0	0.0	94.7
Total spend	**20.9**	**80.8**	**69.7**	**163.8**	**580.2**	**23.0**	**0.0**	**938.4**

Source: OCGC, KPMG, Burgan model assumptions

5.3.3.2 Capital expenditure

Table 5.3 indicates the capital expenditure (both private and government) support required for the 2006 Games. This expenditure occurred over a 5-year period as the facilities required to showcase a world-class event were put in place.

The bulk of this is related to two specific projects – the athlete's village and the MCG upgrade. All facilities will have uses (and therefore community benefits) beyond the Games itself, but the analysis is based on the Games perspective.

Table 5.3
Capital expenditure due to 2006 Games ($M in nominal dollars)

Expenditure item	2002	2003	2004	2005	2006	2007	2008	Total
Yarra Precinct			8.1	25.3	2.0			35.4
Games Venues exc MCG	56.1		31.6	24.6	14.1			126.4
Athletes Village			223.4	173.7	99.3			496.4
MCG Athletics Track			2.5	12.0	8.8			23.3
MCG		388.5	388.5					777.0
MSAC Stage 2			33.3	33.3				66.6
Other			**0.8**	**0.0**				**0.8**
Total	**56.1**	**388.5**	**688.2**	**268.9**	**123.0**			**1,524.7**

Source: OCGC, KPMG, Burgan model assumptions

5.3.3.3 Tourism expenditure

Table 5.4 and Figure 5.1 illustrate the estimated aggregate spend by visitors to Victoria (by category of spend and by year) that is modelled as new to the state. These visitors include spectators, participants and teams, and media. The aggregate expenditure amount is estimated (as discussed earlier in the report) by undertaking a survey of visitors to the event.

The estimated expenditure needs to be net of transfer effects (i.e. switching) in that some visits will replace alternative visits. The following assumptions have been made:

- It is assumed that such switching is minimal for international visitation and that the Commonwealth Games represents the prime purpose for visit of international visitors. We note that during the 2006 Games it is possible that some tourism might be displaced (through congestion issues etc). However, it is assumed that these people will time their trips for either before or after the 2006 Games.

- For domestic spectator visitors it is assumed that there will be a much more substantial displacement effect. The visitor survey undertaken by Quantum Market Research confirms this assumption.

- Expenditure for the remaining Australian spectators is assumed to displace other holiday or other spend, and is therefore not new within the economy.

- The expenditure by Australian participants, and media etc is assumed to be an import replacement (i.e. would be spent attending a games overseas if the games were not held in Australia).

This estimation of expenditure effects is obviously a simplification, and the expenditure patterns for games visitors are in reality likely to be somewhat different to Games attendees. However it is not feasible in a research framework context to reliably identify such spend changes, and therefore the research is limited to these assumptions.

On the basis of the above assumptions, the total visitor expenditure in Victoria of $252 million, has been estimated as resulting in new spend (after switching effects etc) of $202 million, and occurs primarily in the year of the 2006 Games, although small amounts occur in prior years (pre-games visits by participants and organisers) and small amounts occur afterwards through repeat visitation and word-of mouth visitation effects. The allocation of spend to activity has been based on the previous modelling (which in turn was based on BTR research).

Figure 5.1: New Tourism Spend by Type

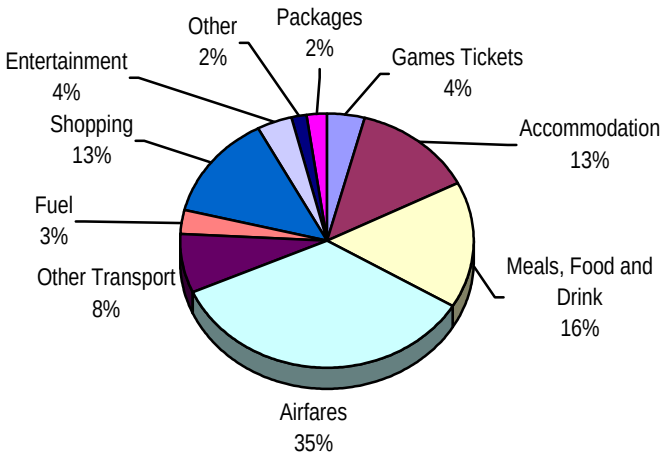


Table 5.4
Estimated aggregate spend by visitors in Victoria due to 2006 Games ($M in nominal dollars)

Expenditure item	2002	2003	2004	2005	2006	2007	2008	Total
Games Tickets					8.57			8.57
Accommodation	0.01	0.03	0.04	0.04	26.66	0.14	0.09	27.00
Meals, Food and Drink	0.02	0.03	0.05	0.05	32.24	0.16	0.11	32.66
Airfares	0.04	0.08	0.13	0.13	68.95	0.38	0.27	69.98
Other Transport	0.01	0.02	0.03	0.03	15.17	0.08	0.06	15.40
Fuel	0.00	0.00	0.00	0.00	5.95	0.04	0.03	6.03
Shopping	0.01	0.03	0.04	0.04	26.90	0.15	0.11	27.28
Entertainment	0.00	0.01	0.01	0.01	7.56	0.04	0.03	7.67
Other	0.00	0.00	0.01	0.01	3.60	0.02	0.01	3.65
Packages	0.00	0.00	0.00	0.00	4.31	0.00	0.00	4.31
Total	**0.10**	**0.20**	**0.30**	**0.30**	**199.91**	**1.02**	**0.72**	**202.55**

Source: KPMG, Burgan model assumptions.

The estimates indicate that much of the economic benefit that arises from hosting the 2006 Games is spread around the tourism sector generally, with air transport, accommodation and meals and drinks (restaurants and cafes) all experiencing increased demand far greater than the actual ticket revenues generated from the event though visitors.

It can be noted that the post-Games evaluation involves a significant increase in international visitation expenditure estimates, and a decline in domestic tourism estimates, relative to the pre-event study. This means that the overall net tourism impact increases, linked to the assumption that the domestic tourism is significantly influenced by shifting, while international tourism is not.

5.3.3.4 Business expenditure

The timing of business expenditure associated with the 2006 Games is outlined in the following table. As for the other impacts, the majority of spending is expected to occur in the year of the event.

Table 5.5
Estimated business expenditure in Victoria due to 2006 Games ($M in nominal dollars)

Expenditure item	2002	2003	2004	2005	2006	2007	2008	Total
Games Driven Events				1.8	5.7			7.5
Sponsorship				47.6	142.7			190.2
Total				**49.4**	**148.3**			**197.7**

Source: OCGC, KPMG, Burgan model assumptions

5.3.4 Estimation of impact

The CGE analysis involves the application of a simple model of the Monash MRF framework with specific consideration of impacts in the tourism and recreation sector by application of spending outcomes to the relevant sectors. The modelling involves application of the expenditures summarised above as a demand stimulus in Victoria, and also modelling for the net effects for Australia as a whole.

The modelling was undertaken for a "typical" year, and then distributed across the years based on proportionate spends[16]. That is, the model was shocked by an average increase in final demand for the relevant sectors for the various categories of estimated spend (construction activity, operations activity, expenditure by foreign tourists and expenditure by domestic tourists). These shocks produce a percentage affect on the Victorian economy, and then this is applied proportionally based on the actual spend per year.

Discussion of the majority of modelling assumptions is provided in the appendix, but it is important to note that the modelling assumes that the construction and operating phase expenditures prior to the 2006 Games are funded via public sector borrowings (the public sector deficit implied by the expenditures is an output of the model).

It is presumed that the accumulated deficit (net of ticket purchases and external funds eg sponsorships) will have to be funded via an increase in taxes, and that this will be recouped over a 15-year period, with an applied public sector borrowing rate of 4% real. This approach can be considered at the conservative end, as discussed in the sensitivities below.

[16] The MMRF is log- linear and so proportionate distribution in this way provides an approximation of the year-by-year impacts. This approach was necessary because the modelling was undertaken using a comparative statics approach, and not applying the full dynamic potential of the MMRF model.

Appendix A outlines the key macro-economic results for the modelled shocks by type of "activity". The CGE modelling estimated the following net outcomes for Victoria as a result of its hosting of the 2006 Games:

- An increase of **GSP** (in net present value terms) of **$1.6 billion** over a 20-year period, with around half of the impact occurring in the year of the Games; and

- An increase in **employment** of approximately **13,600** person years of employment (FTE equivalent).

These results are very similar, and indeed slightly greater to the results of the pre-event analysis. This is not surprising, in that the only variable of significant change is the greater importance of international tourism spends and the lesser importance of the domestic visitor spends – producing a slight increase (see discussion under the tourism section).

The indicative results of these major macro-variables by year are outlined in Table 5.6. The results suggest that the Games had a significant impact on the Victorian economy for the four years leading up to the Games, and then based on the assumptions used the investments will need to be paid for, with smaller negative impacts.

In short, the positive impact of the Games on the Victorian economy is derived from two major effects:

- the external money input into the economy of Victoria through tourist visitation, through sponsorship and other "export" equivalents; and

- the bringing forward of the activity associated with the facilities investment required to undertake the Games.

Table 5.6
CGE modelling results for Net Economic Impact of 2006 Games on Victoria

	2002-03	2004	2005	2006	2007	2008-2022	Net Result PV[1]
Increase in GSP ($million)	$595.9	$833.1	$456.3	$847.0	($103.2)	($120.4)	$1,629
Increase in Employment (FTE's)	8,241	11,551	6,259	12,102	-1,316	-1,550	13,584

1 Based on real discount rate of 7% and in 2006 dollars
Source: Burgan modelled results using MMRF

It should be noted that the employment figures represent full time equivalent measures. In the case of events such as the 2006 Games, and certainly in the period in which the event occurs, many of the employment opportunities will manifest as increases in over-time or in short term casual positions.

To indicate the implications of this, the following assumptions have been used:

- the impacts associated with the construction and operating phases (in all but 2006) are "permanent" positions with similar averages to the economy as a whole; and

- the operating and visitor spend positions created in 2006 are primarily casual and short term. It is assumed that 10% of the positions in operations and in the tourism expenditure sectors

are permanent (full time or part-time) while the balance are short term or casual, or overtime, with an assumed average of 10 weeks worth of work involved (some will be shorter, some longer).

The implication of these assumptions is that it is estimated that in 2006 some 22,000 specific opportunities for employment will be created in Victoria. For most of the other years the job impacts are full time. Over a twenty year period, the holding of the Commonwealth Games in Victoria is estimated to support 13,000 person years of employment in full time jobs and in 2006 create some 22,000 casual jobs.

5.3.5 Sensitivity Testing of Assumptions

As a part of the investigation process, the research team solicited independent comment on the methodology used to undertake the pre-event analysis of the 2006 Commonwealth Games. The modelling above is consistent with the framework of the pre-event analysis, for consistency purposes and because the approach to the analysis was described as 'fair' in the comments on the analysis. However it is noted (partly in response) that the modelling is based on a number of assumptions, and alternative assumptions can be used, and that other researchers modelling the impact may, based on their views of the model structure use different approaches and assumptions.

Therefore, this section discusses some possibilities as to alternative modelling assumptions. However, the following should also be considered to set some context:

- The results of this study provide orders of magnitude outcomes that are consistent with relative magnitudes in other studies of major events. Examples of some similar studies include:

  - "Economic Impact Study of the Sydney 2000 Olympic Games". January 1999. Arthur Anderson and the Centre for Regional Economic Analysis, University of Tasmania, where it was estimated that the Olympics would contribute an additional $6.5 billion to Australia's GDP for the twelve year period 1994-95 to 2005-06 (using MMRF as the modelling framework).

  - A study of the 2002 Manchester Commonwealth Games by the Manchester Council indicated that with expected public sector investment of $277 million pounds there would be 6,100 FTE's of employment created in Manchester, and 17,000 jobs during the conduct of the games.

  - The Rugby World Cup had $494 million of industry sales (primarily visitor expenditure) generated an estimated 5,000 of jobs in Australia as a whole and $300 million impact on GDP (again this study used the MMRF model in assessing this impact).

    Note that the Sydney Olympics study is the most comparable (though the event was three time the scale) due to the mix of both significant facilities investment and visitor spend, whereas the last was primarily visitor spend impact.

- It is generally considered that on major issues the modelling undertaken is conservative. For example, it assumes that all facilities investments funded by the Government must be

paid back through increased taxes in the future (in a relative sense). However, the facilities improvements provide other long benefits in use that can give financial and non-financial returns to the Government. Indeed an alternative, but less conservative assumption, would be to assume that these facilities upgrades were necessary for other reasons, and therefore would have been funded anyway (just at a later date).

- It is noted that the modelled impacts of the Games at the national level are minimal (see the tables below), as is expected in general when applying CGE models to regional focussed projects, implying the modelling has not adopted assumptions that significantly vary from alternative models.

- Many other major events have been analysed using input output frameworks[17] (and indeed the initial pre-event analysis included this context) and therefore the modelling has not used the full features of the CGE framework (eg it has applied the model in a comparative statics context) to allow some comparisons, with it is suggested minimal implications on the order of magnitude of outcomes.

5.3.5.1 Alternative financing and discount rates

The modelling undertaken assumes that governments fund their increased investment using public sector borrowing, at an interest rate of 4% real, and the net present values of impacts are calculated with a discount rate of 7% real. Alternative assumptions would suggest:

- Increasing the borrowing rate to 7% and leaving the discount rate for net present value at 7% would bring the estimated value of the Games down to $1.3 billion, and the jobs impact down to around 6,000 jobs. It would be expected that increasing the cost of financing the infrastructure would have a substantial impact on estimated benefits; and

- Decreasing the discount rate to 4% with a public sector borrowing rate would reduce the estimated Present Value to about $1.4 billion (slightly lower than the base estimate, as the negative impacts of repaying the costs are discounted less significantly), but leaves the job estimate at around 13,600 jobs.

5.3.5.2 Consideration of alterative revenue and cost linkages

As noted above the modelling has not taken into account some alternative potential revenue streams that will offset the financing costs to government. However, there are also a number of other alternative revenue and cost linkage assumptions that could have been incorporated, that would result in different estimated outcomes. The following are some examples:

- Potential for revenues streams from improved facilities to offset the government investment;

[17] McGregor, PJ, Swales, K and Yin, YP (1996) *A long-run interpretation of regional input-output*, Journal of Regional Science, 36, 479-501.) contend that for a "small" region the results from a CGE model converge in the long-run on those from an input-output model. I/O, however, only performs well in the short-run, even at the regional level, for cases where there is sufficient excess capacity for capital constraints to be unlikely to bite in reality. Given that mega events like the Commonwealth Games have a mixture of short-run and long-run characteristics, either modelling approach could be applied to conduct this type of analysis, and we have chosen CGE in this instance.

- Revenue from TV sales etc that would/should be treated as an effective export from the state and country and would offset the costs of funding the operations by the use of export revenues; and

- No allowance is made for an increased revenue base during the pre-Games and Games period, or a reduced one during the repayment period and no detailed analysis of the impacts of alternative possible financing instruments.

In short, it would appear that alternative linkages may have some effects on which sectors of the economy are impacted or how the impact occurs, but again given the orders of magnitude, it is unlikely to affect the overall result.

5.3.5.3 Alternative closures

The detail of closures[18] is discussed below. The modelling is undertaken using given a set of closures, and some alternatives might be used. In terms of the sensitivity of the results to this issue it is noted that:

- In some cases the choice of closure mostly has an impact in terms of who it is that wins and who loses, and how. For example, a closure with fixed labour supply suggests that wages are generally bid up, while flexible labour supply would see more limited wage increases.

- It might be suggested that running the model in comparative statics mode ignores the issue of who bears the cost of assembling any new capital to fund new economy wide activity (rather than games specific activity – which has been specifically modelled). It is noted however that much of the net impact is based on the visitor spend effect and other activity that occurs in 2006, and this has been modelled with short run closure, because while a large event of major significance, it occurs over a short period of time. A characteristic of short term closure is that capital stock does not adjust, and therefore is unlikely to be an issue for visitor spend.

- It is generally acknowledged that 'mega" events have a combination of short term and long term impacts, and this is the way the results have been modelled in the closure approach adopted.

In conclusion, alternative modelling assumptions would produce differing results, some would increase the estimate, and some decrease it. The major effect of different assumptions is likely to be slightly different outcomes for how the benefit is achieved rather than the order of magnitude of the benefits themselves.

Again in the broader perspective, we contend the modelling approach has generally been conservative and the results of this study are similar in orders of magnitude to other similarly framed mega event studies.

[18] A model closure involves different assumptions as to how the economy will respond to demand shifts.

A Modelling assumptions

A.1 Introduction

This chapter of the report:

- Describes the CGE model used for the analysis;
- Outlines the assumptions used in the modelling; and
- Summarises the outputs of the MMRF model.

A.2 Description of Monash MRF model

The analysis has applied the Monash MRF model to assess the economic impact of the change in expenditures associated with hosting the 2006 Games. The Monash MRF model is a multi-regional, dynamic CGE model[19]. It distinguishes up to eight Australian regions (six States and two Territories) and, depending on the application, up to 144 commodities/industries.

In this application, the base model has been applied with 5 regions and 25 industry sectors. The focus of the modelling has been on the service sectors associated with the activities generated through events. The model recognises:

- Domestic producers classified by industry and domestic region;
- Investors similarly classified;
- Up to eight region-specific household sectors;
- An aggregate foreign purchaser of the domestic economy's exports;
- Flows of greenhouse gas emissions and energy usage by fuel and user;
- Up to eight state and territory governments; and
- The Federal Government.

The model contains explicit representations of intra-regional, inter-regional and international trade flows based on regional input-output data developed at the Centre of Policy Studies, and includes detailed data on state and Federal governments' budgets. As each region is modelled as a mini-economy, Monash MRF is ideally suited to determining the impact of region-specific economic shocks. Second round effects are captured via the model's input-output linkages and account for economy-wide and international constraints.

[19] MMRF-Green: A Dynamic Multi-Regional Applied General Equilibrium Model Of The Australian Economy, Based On The MMRF And Monash Models

Outputs from the model include projections of:

- GDP and aggregate national employment;
- Sectoral output, value-added and employment by region;
- Export earnings, import expenditure and the balance of trade;
- Greenhouse gas emissions by fuel, fuel user and region of fuel use;
- Energy usage by fuel, energy user and region of energy use;
- State and Territory revenues and expenditures;
- Regional gross products and employment; and
- Regional international export earnings, international import expenditures and international balance of payments.

The Centre of Policy Studies has undertaken numerous applications of Monash MRF on behalf of commercial and government organisations. Some of these studies simulated:

- The regional effects of national policies;
- The effects of region-specific infrastructure projects;
- The effects of alternative regional forestry policies; and
- The effects of different policies to reduce Australian emissions of CO_2 in line with Kyoto commitments.

While most studies of events around Australia have applied an input-output framework, there is an increasing tendency to investigate using the superior framework that CGE provides – particularly in the case of larger events.

A.3 Specific CGE modelling assumptions

A.3.1 Estimates of Demand Shocks

The CGE analysis involves the application of a model of the Monash MRF framework with specific consideration of impacts in the tourism and recreation sector by application of spending outcomes to the relevant sectors. The model has been applied using the basic closures as provided by the Monash team in the example analyses provided with the GEMPAK package (and available from the Centre of Policy Studies). Minimal changes have been made to the closures as provided, and those changes have been discussed with Centre of Policy Studies research staff.

The modelling involves application of the gross expenditures consistent with Table A.1 as a demand stimulus in Victoria. The modelling was undertaken for a "typical" year, in 1996/97 dollars (i.e. the year of underlying tables). Further, the shocks have to be adjusted to represent the proportional change relative to the size of the underlying economy in 1996/97 for the respective sectors that experience the demand change.

The construction and operational phases are modelled as an exogenous increase in government demand. The domestic visitor demand is modelled as an increase in demand (shift in taste) by residents of the rest of Australia for the output of the relevant tourism products (therefore decreasing demand for the same products in the rest of Australia). The foreign visitor demand is modelled as an increase in export demand for these sectors. The miscellaneous and business expenditures are assumed to cause demand shifts as per the operating expenditures. The state and local government components of these expenditures are assumed to be funded via government deficit funding, and therefore the deficit must be financed (assumed to be over a 15 year period). The private sector and Commonwealth Government investments are assumed to be financed based on the standard closure assumptions of the long term construct of the Monash model.

Therefore, given that the state and local government input into the construction and operating phases are modelled as in increase in government demand, there is a consequent decline in the budget position. It is assumed that this decline is funded via the public sector. Therefore, it is assumed that the accumulated deficit will have to be funded via an increase in taxes, and that this will be recouped over a 15-year period.

This has then been adjusted downwards for expenditure of visitors on tickets, and for sponsorship income (all of which offset the deficit). It is assumed that the accumulated deficit will be repaid as an annuity payment over 15 years (of around $15 million), through an increase in payroll tax. It should be noted that what mechanism is used to repay the debt is not critical for the aggregate results, but will influence which sectors are most impacted. Therefore, only the aggregate results should be focussed on.

A.3.2 Model closures

The choice of model closure can potentially have a significant impact on the results of the model, as it involves different assumptions as to how the economy will respond to demand shifts. The model has been applied in a comparative statics context[20] (although the model has the capacity to be used in a dynamic context, which would internalise the financing adjustments).

In a comparative-static closure, included in the exogenous set are all variables that can be regarded as naturally exogenous in a CGE model. These may be observable variables such as tax rates or unobservable variables such as technology and preference variables. Also included in the exogenous set are all variables that are naturally endogenous in a dynamic model, but which are naturally exogenous in a static model. These will typically include investment by industry and one of the capital stock or rate of return for each industry.

[20] Consistent with the observation that the CREA/Arthur Andersen (1999) Economic Impact of the Sydney 2000 Olympic Games, Arthur Andersen, Sydney was also undertaken using a comparative statics framework

In this context, there is also a decision to be made with respect to whether the closure should be:

- ***Long term*** – The model's standard closure, with national aggregate employment and national rates of return on capital fixed exogenously. The national real wage is endogenous, though wage differentials at the regional level are exogenous. Employment is formally an endogenous variable both at the regional and national levels, but effectively exogenous at the national level with unemployment rates exogenous. Capital stocks are endogenous and rates of return exogenous.

- ***Short term*** – By swapping the above variables between exogenous and endogenous categories using the standard closure as a starting point, we can develop a comparative static short-run closure. The national wage is made exogenous. Capital stocks become exogenous and rates of return endogenous.

The modelling is based on long-term closure for the demand shifts that occur over an extended period (i.e. construction and operational expenditures) and short term closures for the visitor expenditure impacts during the 2006 Games itself. Because the majority of the visitor impacts are in a short period, it is presumed that this does not cause a longer-term reallocation of resources.

Note that labour and capital markets are assumed to flow freely between states and therefore the increase is economic activity induces a response of population growth within Victoria as a consequence (rather than increases in real wages).

The specific assumptions implied for these closures can be found by referencing the CMF (GemPak or MMRF modelling files) that are made available with GemPak itself).

Table A.1
Calculation of Economic Impacts using CGE framework

	Construction Phase	Operating and other Spend Phase	Financing	Domestic Visitor Spend	Foreign Visitor Spend
Model Closure Assumptions	**Long term**	**Long term**	**Long term**	**Short term**	**Short term**
Demand Shock Modelled *($M, 96/97)*					
Victoria	87.368	185.215	41.000	28.688	72.845
Other Australia	0.000	0.000	0.000	-28.688	0.000
National	87.368	185.215	41.000	0.000	72.845
% Change in National Macro Variables					
Real GDP	0.000	-0.010	0.000	0.000	0.000
Consumption	0.010	0.010	0.010	0.000	0.010
Investment	0.000	0.000	0.000	0.000	0.000
State govt	0.150	0.170	0.000	0.000	0.000
Fed govt	0.000	0.000	0.000	0.000	0.000
Exports	-0.100	-0.130	-0.030	0.000	0.020
Imports	0.020	0.020	0.010	0.000	0.020
CPI	0.000	0.000	0.000	0.000	0.000
Employment	0.000	0.000	0.000	0.000	0.010
% Change in Vic Macro Variables					
Real GDP	0.070	0.100	0.090	0.020	0.050
Real consumption	0.080	0.110	0.110	0.020	0.070
Investment	0.070	0.090	0.120	0.050	0.140
State government	0.630	0.720	0.000	0.000	0.000
Federal government	0.000	0.000	0.000	0.000	0.000
Interstate exports	-0.020	-0.030	0.040	0.050	-0.070
International exports	-0.090	-0.100	0.100	-0.040	0.240
Interstate imports	0.060	0.070	0.050	0.040	0.090
International imports	0.080	0.100	0.100	0.020	0.080
CPI	0.000	-0.010	-0.030	0.010	0.040
Employment	0.080	0.110	0.080	0.030	0.070
Change in State surplus *($ million, 96/97)*	-24.7	-31.2	-41.0	4.5	13.1

Source: Burgan modelled results using MMRF

B Comparison with Pre-Games report

The outcomes from the KPMG pre-Games study are presented here, to allow a comparison between the estimated outcomes to actuals.

B.1 Gross expenditure

Table B.1 provides a comparison between actual gross expenditure (Post-Games figures) and estimated gross expenditure (Pre-Games figures). This includes both public (Government) and private expenditure.

Table B.1
Spend types associated with 2006 Games (nominal dollars)

Spend item	Actual gross spend $'000	Estimated gross spend $'000	Difference[1] $'000
Total construction	***1,524,731***	***1,478,923***	**45,808**
Initial bid costs	6,100	6,100	**0**
Commonwealth Government security costs	79,100	84,800	**(5,700)**
Local Government operational costs	8,125	8,125	**0**
Spending on cultural programs[2]	13,879	680	**13,199**
Other operating costs	831,152	937,100	**(105,948)**
Total operational and miscellaneous	***938,356***	***1,036,805***	**(98,449)**
Pre-event tourism	2,900	4,986	**(2,086)**
Domestic event tourism[3]	75,047	48,500	**26,547**
International event tourism	172,660	100,200	**72,460**
Post-event tourism	1,761	1,799	**(38)**
Total tourism	***252,368***	155,485	**96,883**
Games driven events	7,501	5,807	**1,694**
Sponsorship expenditure[4]	190,200	218,000	**(27,800)**
Total business	***197,701***	***223,807***	**(26,106)**
Total[1]	**2,913,157**	**2,895,021**	**18,136**

1 Total / difference does not match sum of individual items due to rounding
2 Includes the Cultural program budget and Local Government and other organisations contributions, refer section B.1.1 below.
4 Domestic event tourism is net of 'switching' – i.e. it excludes expenditure from Regional Victorians and those in metropolitan Melbourne who did not forgo a holiday outside of Victoria to attend the 2006 Games
5 Represents additional sponsorship expenditure above the sponsorship revenue of $95.1 million contained within 'Other operating costs'
Note: The total has not been adjusted to reflect present value differences for spends occurring in different years, nor allocations to direct imports
Source: KPMG, OCGC, Quantum Research

B.1.1 Operational and miscellaneous expenditure

Table B.2 provides a comparison between actual operational and miscellaneous expenditure (Post-Games figures) and estimated operational and miscellaneous expenditure (Pre-Games figures).

Table B.2
Operational and miscellaneous spend in Victoria due to the 2006 Games (nominal dollars)

Budget item	Actual ($M)	Estimated ($M)	Difference ($M)[1]
Miscellaneous spend			
Initial bid costs	6.1	6.1	**0**
Commonwealth Government security costs	79.1	84.8	**5.7**
Local Government operational costs	8.1	8.1	**0**
Spending on cultural programs[2]	13.9	0.7	**13.2**
Other operating costs	831.1	931.1	**(105.9)**
Total[1]	**938.3**	**1,036.8**	***(98.5)***

1 Total / difference does not match sum of individual items due to rounding
2 Includes the Cultural program budget, Local Government and other organisations contributions
Source: OCGC

Whilst the spending on cultural programs spend appears to have increased significantly, it should be noted that the variance is due to change in the presentation of the figures from the pre-Games report to the post-Games report. That is, in the pre-Games report the Cultural Program budget were included in the 'Other operating costs', whereas they have now been shifted to 'Spending on cultural programs'.

B.1.2 Construction expenditure

Table B.3 provides a comparison between actual construction expenditure (Post-Games figures) and estimated construction expenditure (Pre-Games figures).

Table B.3
Construction activity in Victoria due to the 2006 Games (nominal dollars)

Capital project	Actual ($M)	Estimated ($M)	Difference ($M)[1]
Yarra Precinct Infrastructure[2]	35.4	31.1	**4.4**
Games Venues			
Olympic Park Athletics Track Replacement	2.7	2.7	**0**
State Netball and Hockey Centre Pitch Replacement	27.7	27.8	**(0.1)**
State Mountain Bike Centre Development	2.4	3.0	**(0.6)**
Melbourne Sports and Aquatic Centre (Stage 2)	66.6	56.2	**8.4**
Lawn Bowls, State Soccer Centre and Training Velodrome	20.0	17.3	**2.7**
Melbourne Gun Club	0.2	0.2	**0**
Melbourne International Shooting Centre	1.8	1.8	**0**
Welsford Rifle Range	0.8	0.8	**0**
Vodaphone Arena	64.0	66.0	**(2.0)**
Traralgon Sports Stadium	1.8	1.6	**0.2**
Ballarat Basketball	0.5	0.5	**0**
Bendigo Basketball Stadium	2.0	2.0	**0**
Geelong Arena	1.2	1.2	**0**
MCG			
Athletics Track	23.3	18.5	**4.8**
Northern Stands Redevelopment	777.0	777.0	**0**
OCGC Office Fit out	0.8	0.9	**(0.1)**
Village costs	496.4	468.4	**27.9**
Total[1]	**1,524.7**	**1,478.9**	**45.8**

[1] Total / difference does not match sum of individual items due to rounding
[2] Yarra Precinct includes the MCG / Birrarung Marr Bridge, Jolimont Station minor works and Yarra Precinct public lighting upgrade
Source: OCGC

Capital projects that have shown material differences in actual and estimated expenditure (that have varied in expenditure by +/- 10%) include the:

- Yarra Precinct Infrastructure (14.1% above estimate);
- State Mountain Bike Centre Development (20% below estimate);
- Melbourne Sports and Aquatic Centre (Stage 2) (14.9% above estimate);
- Lawn Bowls, State Soccer Centre and Training Velodrome (15.6% above estimate);
- Traralgon Sports Stadium (12.5% above estimate);
- MCG Athletics Track (25.9% above estimate);
- OCGC Office Fit out (11.1% above estimate); and
- Village costs (5.9% above estimate).

B.1.3 Tourism

Table B.4 provides a comparison between Quantum Research's estimates of visitor numbers (Post-Games figures) and BTR's forecasts of visitors (Pre-Games figures) due to the 2006 Games.

Table B.4
Visitor number estimates

Visitor Group	Quantum estimated visitor numbers	BTR forecast visitor numbers	Difference
Spectators, visitors, business			
Overseas	57,010	32,500	**24,510**
Interstate	60,125	52,075[1]	**8,050**
Regional Victoria	37,035	75,225[2]	**(38,190)**
Metro Melbourne foregoing holidays	3,763	Not estimated separately	
Officials			
For team (overseas)	71	Not estimated separately	
For individuals (overseas)	2,161	Not estimated separately	
Athletes			
Interstate	Not estimated	1,300 (incl. officials)	
Overseas	3,706	7,000 (incl. officials)	**(3,294)**
Media			
Interstate	624	1,000	**(376)**
Overseas	2,089	2,000	**89**
Administration and volunteers	Not estimated	1,600	
Total	**166,513**	**220,440**	**(53,927)**

1 Number of interstate visitors based on proportions included in BTR report. Total number of interstate visitors = (64.9% x 75,000 overnight visitors) + (3.4% x 100,000 day trip visitors)
2 Number of Regional Victorian visitors based on proportions included in BTR report. Total number of Regional Victorian visitors = (31.1% x 75,000 overnight visitors) + (51.9% x 100,000 day trip visitors)
Source: Quantum, BTR, KPMG

Table B.5 provides a comparison between Quantum Research's estimates of visitor expenditure (Post-Games figures) and BTR's forecasts of visitor expenditure (Pre-Games figures) due to the 2006 Games.

It is important to note that the expenditure of the Regional Victorian visitors and those people from Metropolitan Melbourne who did not forego holidays to attend the Games does not provide an economic impact for this event based on the assumption this expenditure would have occurred anyway, if the 2006 Games were not held.

Accordingly the expenditure from these two visitor groups has not been included in the Post-Games modelling.

Table B.5 Visitor spend estimates			
Visitor Group	**Estimated *actual* total spend ($M)**	**Estimated ($M)**	**Difference ($M)[1]**
Domestic - metropolitan Melbourne visitors forgoing holidays & interstate	75.0	48.5	**26.5**
International	172.6	100.2	**72.4**
Total[1]	**247.7**	**148.7**	**99**
1 Total / difference does not match sum of individual items due to rounding Source: Quantum, BTR, KPMG			

The noticeable difference between Quantum Research's estimates of domestic and international visitor expenditure (Post-Games figures) and BTR's forecasts of domestic and international visitor expenditure (Pre-Games figures) due to the 2006 Games is a result of the variation in estimated visitor numbers that provide the basis for these spend estimates.

Overall, the total estimated actual visitor spend due to the 2006 Games is significantly higher (66.5%) than the pre-Games estimates.

B.1.4 Games driven events

Table B.6 provides a comparison between the actual number of delegate/participants (Post-Games figures) and estimated number of delegate/participants (Pre-Games figures) at Games driven events.

Table B.6 Events driven by the 2006 Games – delegate / participant numbers			
Event	**Actual delegate numbers**	**Estimated delegate numbers**	**Difference**
13th Commonwealth International Sport Conference	650	950	**(300)**
Cultural Tourism Conference	-	500	**(500)**
Australian Conference of Science and Sport	837	1,000	**(163)**
National Conference on Volunteering	401	-	**401**
Candidate Cities Seminar	110	-	**110**
2005 Pacific School Games	3,100	-	**3,100**
2004 Commonwealth Youth Games	2,013	-	**2,013**
Total	7,111	2,450	***4,661***
[1] Split between Victorian / Interstate and overseas delegates not available Source: KPMG, Tourism Victoria, LaTrobe University			

As Table B.6 highlights, the number of events driven by the 2006 Games and their associated attendance was notably higher than original estimates.

Table B.7 provides a comparison between the delegate/participants' expenditure (Post-Games figures) and estimated delegate/participants' expenditure (Pre-Games figures) at Games driven events.

Table B.7 Events delegate expenditure driven by the 2006 Games (2006 dollars)			
Events	**Total actual expenditure (derived) $'000**	**Estimated expenditure (derived) $'000**	**Difference[1] $'000**
13th Commonwealth International Sport Conference	1,360.6	2,575.0	**(1,214.3)**
Cultural Tourism Conference	-	1,190.7	**(1,190.7)**
Australian Conference of Science and Sport	1,586.0	1,934.8	**(1,933.2)**
National Conference on Volunteering	794.4	-	**794.4**
Candidate Cities Seminar	277.1	-	**277.1**
2005 Pacific School Games	2,111.8	-	**2,111.8**
2004 Commonwealth Youth Games[2]	1,371.3	-	**1,371.3**
Total[1]	7,501.4	5,700.5	***1,800.9***

[1] Total / difference does not match sum of individual items due to rounding
[2] Split between Victorian / Interstate and overseas delegates not available
Source: KPMG, Tourism Victoria, LaTrobe University

Due to the higher number of events driven by the 2006 Games (and higher number of delegates), total actual expenditure generated by these events was 31.6% higher than estimates.

B.1.5 Sponsorship

Table B.6 provides a comparison between the additional sponsorship expenditure (Post-Games figures) and estimated additional sponsorship expenditure (Pre-Games figures) due to the 2006 Games.

Table C.8 Sponsorship expenditure driven by the 2006 Games (nominal dollars)			
Spend type	**Estimated sponsorship expenditure**		
	Total ($M)	**Estimated ($M)**	**Difference ($M)**
Base sponsorship	95.1	109.0	**(13.9)**
Additional expenditure by sponsors	190.2	218.0	**(27.8)**

Source: KPMG, OCGC

Total estimated sponsor expenditure driven by the 2006 Games, above the base sponsorship included within the M2006 operating budget sponsors, was 11.8% less than the estimates provided in the Pre-Games report.

B.2 GCE analysis

The comparison in results of the CGE analysis for Victoria between actual gross expenditure (Post-Games figures) and estimated gross expenditure (Pre-Games figures) are provided in Table B.9.

Table B.9
Calculation of Net Economic Impacts using CGE framework

Item	Post-Games modelling	Pre-Games modelling	Difference
NPV Impact on GSP in Victoria ($M 2005)	1,629	1,538	91
Increase in Employment in Victoria	13,584	13,514	70

Source: KPMG, Burgan

The Post-Games modelling has shown a small increase in both the NPV impact on GSP (5.9%) and employment (0.5%) in Victoria.