Economic Impact of Hosting 2015 Cricket World Cup Games in the Nelson-Tasman

Source: Telegraph, Getty Images

Final Report

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berl economics

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1. Summary

The Cricket World Cup (CWC) is one of the biggest international sporting events in one day test cricket. Held every four years, the CWC attracts teams and audiences from 14 cricketing nations for 49 matches over 11 weeks.

Australia and New Zealand are co-hosting the CWC in 2015. The locations of the matches are yet to be decided and will be split evenly between Australia and New Zealand.

The Nelson Regional Economic Development Agency (EDA) is exploring the value of bidding to host games (two pool matches and two warm up games) as well as hosting a team for each game.

BERL was commissioned by the Nelson Regional EDA to undertake an economic impact analysis of the 2015 CWC on the Nelson-Tasman region.

This report identifies the economic impact of hosting the four CWC games on the Nelson-Tasman economy as well as the additional impact of hosting a team.

The impact of holding the games is highly linked to the number of spectators. The spectators attending matches will be highly dependent on the world ranking of the team playing, with the most popular teams such as New Zealand and Australia attracting larger crowd numbers than lower ranked teams. Therefore, to assess the lowest and highest economic impact on Nelson-Tasman hosting the four CWC games, we have measured the impacts under two scenarios:

- Scenario 1 – High: This assumes that Nelson-Tasman receives four CWC games that includes a top ranked or popular team.
- Scenario 2 – Low: This assumes that Nelson-Tasman receives four CWC games that include only lower ranked or unpopular team.

The economic impact analysis identifies additional spending (expenditure) directly generated by the above scenarios.

The Table below shows the economic impact on the Nelson-Tasman economy of hosting four games and then hosting a cricket team under both scenarios.

Table 1.1 Economic Impact of CWC scenarios on Nelson-Tasman

Scenario 1 - high	Direct	Total
Expenditure ($m)	2.8	4.6
GDP ($m)	1.4	2.4
Employment (FTEs)	30	40

Scenario 1 + hosting	Direct	Total
Expenditure ($m)	3.1	5.1
GDP ($m)	1.5	2.6
Employment (FTEs)	33	44

Scenario 2 - low	Direct	Total
Expenditure ($m)	1.3	2.2
GDP ($m)	0.7	1.1
Employment (FTEs)	14	19

Scenario 2 + hosting	Direct	Total
Expenditure ($m)	1.6	2.7
GDP ($m)	0.8	1.3
Employment (FTEs)	17	23

Source: BERL

The impact of the additional expenditure generated by the four games and hosting a cricket team is expressed in terms of GDP and employment.

Under Scenario 1 – High, where Nelson-Tasman hosts games that include a higher ranked or popular team, it is estimated that there will be 5,620 out-of-region visitors spending a total of $2.8 million in the Nelson Region due to the two pool and warm up matches. The additional expenditure of $2.8 million generates direct GDP and employment of $1.4 million and 30 FTEs for one year. Adding indirect and induced effects increases GDP to $2.4 million and employment to 40 FTEs for one year.

If Nelson-Tasman also hosted a team, the number of out-of-region visitors increases to 5,647 people and expenditure increases to $3.1 million. This additional expenditure generates direct GDP and employment of $1.5 million and 33 FTEs for one year. Adding indirect and induced effects increases GDP to $2.6 million and employment to 44 FTEs for one year.

Under Scenario 2 – Low, where Nelson-Tasman hosts matches with lower ranked teams, it is estimated that the 2,429 out-of-region visitors will spend a total of $1.3 million in the Nelson Region due to the two pool and warm up matches. This additional expenditure generates direct GDP and employment of $700,000 and 14 FTEs for one year. Adding indirect and induced effects increases GDP to $1.1 million and employment to 19 FTEs for one year.

If Nelson-Tasman also hosted a team, the number of out-of-region visitors increases to 2,456 people and expenditure increases to $1.6 million. This additional expenditure generates direct GDP and employment of $800,000 and 17 FTEs for one year. Adding indirect and induced effects increases GDP to $1.3 million and employment to 23 FTEs for one year.

2. Introduction

BERL was commissioned by the Nelson Regional Economic Development Agency (EDA) to provide an economic impact analysis on the Nelson-Tasman regional economy from hosting Cricket World Cup (CWC) 2015 warm up and pool games.[1]

The CWC is the premier international championship of men's One Day International cricket organised by the International Cricket Council. The CWC started in England in 1975 and is held every four years.

The CWC has a total of 49 matches (excluding warm-ups) held over four stages:

- Stage 1: The 14 teams are divided into two pools of seven. Each team will play six games in its group.
- Stage 2: The top four teams from each group play in the quarter finals.
- Stage 3: The four top teams will play in the semi finals
- Stage 4: Finals

The 11th CWC is in 2015 and will be jointly hosted by Australia and New Zealand. There will be a total of 14 international teams competing for the CWC over 11 weeks during February/March in 2015. The location of the games will be evenly split between the two countries. [2]

The Nelson Regional EDA has expressed its interest to bid for four games (two pool matches and two warm up games) and has offered to host a team during stage 1 of the event.

2.1 Method

The CWC will attract spectators, cricket teams (players and support crews), match officials, CWC officials, national delegates and media from around the world. These attendees will spend money within the Nelson-Tasman. The additional expenditure generated as a result of the CWC is based on those visiting from outside the Nelson-Tasman.

The level of attendance of these visitors at the two pool matches and two warm up matches held in the region is highly dependent on the popularity/ranking of the team playing. The analysis explores two scenarios to measure the likely impact of these matches on the Nelson-Tasman:

[1] The Nelson-Tasman or Nelson-Tasman region consists of the Nelson City Council and the Tasman District Council.

[2] This includes 10 Full Members (Australia, Bangladesh, England, India, New Zealand, Pakistan, South Africa, Sri Lanka, West Indies and Zimbabwe) who receive automatic qualification, and four qualifying associated or affiliated members.

- Scenario 1 – High: the high scenario is based on a Tier One team playing.
- Scenario 2 – Low: the low scenario is based on the games being played between second tier teams (Tier Two).

A Tier One team, based on the International Cricket Council's One Day International cricket rankings, is likely to be one of the top eight ranked nations, such as Australia, South Africa, Pakistan, New Zealand and India. Tier One also includes popular teams such as Ireland which are likely to attract a greater number of visitors.

On top of these two scenarios, we have also measured the impact from the Nelson-Tasman hosting a team during the CWC for both scenarios.

To measure the additional expenditure generated, as a result of the Nelson-Tasman hosting pool matches and events under the above scenarios, BERL gathered existing information on the CWC and used the economic impact assessments (EIAs) of two major sporting events already completed for the Nelson-Tasman, the 2012 Rugby World Cup and the 2015 FIFA U20 World Cup.[3]

The information gathered from these sources were combined to provide information on the number and type of people attending pool and warm up matches (i.e. participants, event organisers, spectators, media), their likely expenditure and their length of stay in the region.

This expenditure was then analysed using a regional input-output model of the Nelson City.[4] This model calculated the direct impact on the regional economy in terms of Gross Domestic Product (GDP) and employment (FTEs).[5]

Multiplier analysis was then used to identify the indirect and induced activity generated as a result of the initial expenditure.[6] Together, this information was used to determine the total impact of the CWC on the Nelson-Tasman economy.

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[3] Nelson-Tasman RWC EIA completed by BERL in 2008 and the 2015 FIFA U20 World Cup EIA completed by John Cook & Associates in 2011.

[4] BERL uses 2005/06 regional input-output tables and multipliers developed by Butcher and Associates. Although the multipliers are of the Nelson City, Nevertheless, we believe the multipliers used provide a valid reflection of the impact of the CWC on the Nelson-Tasman region.

[5] The volume of employment is usually expressed in Full-Time Equivalent jobs (FTEs). For a given year, Full Time Equivalents are calculated by counting the number of full-time employees, working proprietors and one-third of the number of part-time employee. In other words, there are three part-time employees for every full-time employee.

[6] Further information on multiplier analysis is provided in the Appendix.

2.2 Report outline

The remainder of this report is set out as follows: Section 3 details the key inputs used to estimate the likely direct expenditure generated as a result of hosting CWC games (the scenarios) and hosting a team. Section 4 then uses the direct expenditures identified in Section 3 to estimate the economic impact of the scenarios. An appendix explaining multiplier analysis and the key economic terms is included in section 5.

3. Direct Expenditure from CWC 2015

Under Scenario 1 – High, where the Nelson-Tasman receives highly ranked or popular teams, it is estimated that there will be 5,620 out-of-region visitors spending a total of $2.8 million in the Nelson-Tasman region due to the two pool and warm up matches. If Nelson-Tasman hosted a team, the number of out-of-region visitors increases to 5,647 people and expenditure increases to $3.1 million.

Under Scenario 2 – Low, where Nelson-Tasman receives lower ranked or unpopular teams, it is estimated that the 2,429 out-of-region visitors will spend a total of $1.3 million in the Nelson-Tasman region due to the two pool and warm up matches. If Nelson-Tasman hosted a team, the number of out-of-region visitors increases to 2,456 people and expenditure increases to $1.6 million.

This section details the key inputs used to determine the additional expenditure generated from:

- Nelson-Tasman hosting two warm up games and two pool matches that include a Tier One team (Scenario 1) or Tier Two team (Scenario 2); and
- Hosting the above Tier One or Tier Two match plus hosting a CWC team under both scenarios.

3.1 Visitors to the Nelson-Tasman

From hosting CWC games, there will be different types of visitors to the Nelson-Tasman, such as spectators, media, officials, and players. These visitors will stay and spend different amounts of time and money within the region.

The number, expenditures, and length of stay of these different types of visitors are described separately below.

3.1.1 Spectators

Number of spectators

Table 3.1 below provides the estimated number of spectators at warm-up and pool matches under each scenario as estimated by the Nelson Regional EDA.

Table 3.1 Estimated number of spectators

Spectators	Number of games	Scenario 1 high	Scenario 2 low
Warm up match	2	3,000	1,000
Pool match	2	6,000	4,000

Source: BERL

It is estimated that for the two warm up matches, there will be 1,000 spectators if the teams are Tier Two (Scenario 2) and 3,000 spectators if the game is Tier One (Scenario 1).

For pool matches, it is estimated that the number of spectators could range from 4,000 if it is a Tier Two match to 6,000 if it is a Tier One match.

Therefore in total, the games could attract between 5,000 (under Scenario 2) and 9,000 (under Scenario 1) spectators depending on the quality of the teams.

Spectator length of stay and daily expenditure

The FIFA 2015 EIA was used to provide an estimate of the proportion of spectators that are from the Nelson-Tasman region, the rest of New Zealand and from overseas. The FIFA EIA was also used to provide an estimate of the likely length of stay and daily spend of these spectators. These estimates are presented in Table 3.2 below.

Table 3.2 Spectator analysis

Spectator analysis	High (%)	Low (%)	Length of stay (days)	Daily spend ($)
Nelson-Tasman	*70*	*77*	*0.1*	*41*
Rest of New Zealand	23	18	1.5	215
International	7	5	2.7	345

Source: BERL

The number of spectators attending the matches is different under the two scenarios. A Tier One team is expected to attract more out-of region spectators than if it has only Tier Two teams.

If the Nelson-Tasman region has a Tier One quality match then it is estimated that 70 percent of spectators will be from within the region, 23 percent will be from elsewhere in New Zealand and seven percent will be from overseas.

If the Nelson-Tasman region has a Tier Two quality match then it is estimated that 77 percent of spectators will be from within the region, 18 percent will be from elsewhere in New Zealand and five percent will be from overseas.

The length of stay of attendees and daily spend is the same under both scenarios.

Spectators from elsewhere in New Zealand are estimated to stay 1.5 days within the Nelson-Tasman region and spend on average $215 per day. Spectators from overseas are estimated to stay an average of 2.7 days within the Nelson-Tasman region and spend $345 on average per day.

3.1.2 Teams, support crews, and match officials

Based on the FIFA 2015 EIA, Table 3.3 provides a breakdown of players, match officials and support crews, as well as their length of stay and daily spend.

Table 3.3 Profile of players, support staff and CWC officials

Category	Total number (high)	Total number (low)	Length of stay (days)	Daily spend ($)
Players	42	42	3	363
Support staff	6	6	3	363
Match officials	6	6	2	363
Inspection visit	2	2	1.5	363
CWC officials	5	5	2	363
National delegates	6	6	2	363
Total	67	67	2.5	363

Source: BERL

The above table shows the range of people involved with the running of the two cricket matches and two warm-up matches.

The number of players, support staff, match officials, inspection visitors, CWC officials, and national delegates does not change under Scenario 1 and Scenario 2, and their length of stay and daily spend does not vary under both scenarios.

It was estimated that a total of 67 players and associated officials and delegates will be in the Nelson-Tasman region for each match. The length of stay varies by category from 1.5 days for inspection visitors to three days for players and support staff, an average of 2.5 days. On average, daily spend is estimated at $363.

3.1.3 Media

The number of media personnel present at the matches was estimated based on the FIFA 2015 EIA. We have assumed that only half of the media present at a pool match would attend warm up matches. Table 3.4 provides an estimate of the number of media personnel, their length of stay, and their daily spend.

Table 3.4 Profile of media

Media	High	Low	Length of stay (days)	Daily spend ($)
Media contingent (match)	30	20	1.9	363
Media contingent (w arm up)	15	10	1.9	363

Source: BERL

It is estimated that media attending pool matches could be between 20 to 30 depending on the quality of the match. The number of media personnel attending the two warm up matches in the Nelson-Tasman region could vary between 10 and 20 personnel. For both pool and warm up matches, media are estimated to stay on average 1.9 days and spend an average of $363 per day within the Nelson-Tasman region.

3.1.4 The addition of hosting a team

The Nelson-Tasman could potentially host a team during pool play. The team and entourage numbers are based on FIFA 2015 EIA estimates. Table 3.2 estimates the number of player and support staff along with their length of stay and daily spend.

Table 3.5 Profile of a host team

Hosting a team	Total number	Length of stay (days)	Daily spend ($)
Players	21	20	363
Support staff	6	20	363

Source: BERL

Hosting a team is the same under both scenarios. It is estimated that hosted teams have 21 players and six support staff staying 20 days (3 weeks) with a daily spend of $363.

3.1.5 Expenditure patterns for all visitors

The matches will attract people from outside the Nelson-Tasman region and New Zealand. These people spend significant sums of money during their stay in hotels, restaurants, travel, and general retail within the region. Table 3.6 shows the proportion of expenditure across eight broad categories for all visitors to the Nelson-Tasman region.

Table 3.6 Expenditure patterns, New Zealand and international

Expenditure	Rest of New Zealand	International
Accomodation cost	15%	30%
Food	37%	39%
Local transport spend	6%	3%
Fuel/petrol	9%	11%
Retail spend	15%	8%
Attractions	7%	3%
Travel non-air	5%	3%
Travel air	6%	3%
Total	**100%**	**100%**

Source: BERL

The expenditure patterns are based on those from the Rugby World Cup 2011 EIA. Analysis of the survey data revealed different spending patterns for those visiting the Nelson-Tasman region from elsewhere in New Zealand and for those visiting the region from overseas.

It is estimated that visitors to the Nelson-Tasman region from elsewhere in New Zealand spend most of their money on food (37 percent) followed by accommodation (15 percent), and retail (15 percent). For international visitors to the Nelson-Tasman region, the large expenditure areas are food (39 percent), accommodation (30 percent) and fuel (11 percent).

3.2 Direct expenditure from visitors to CWC

The total additional expenditure is calculated by identifying the number of people attracted to the region for the event and then identifying their daily expenditure and multiplying this by the number of days they stay. Expenditure by local residents (i.e. from the Nelson-Tasman region) is excluded as it is considered a recycling of money that is already present within the local economy.

3.2.1 Scenario 1– High: Out-of-region expenditure

Table 3.7 shows the estimated number of people, length of stay, daily spend and total expenditure of visitors to both pool and warm up matches. It also shows the additional expenditure generated from the Nelson-Tasman region hosting a team.

Table 3.7 Spending projection for Scenario 1 – High

Scenario 1 - Tier One team (high)	Pool matches (X2)				Warm up matches (X2)				Total expenditure ($)
	Number of visitors	Length of stay (days)	Daily spend ($)	Expenditure ($)	Number of visitors	Length of stay (days)	Daily spend ($)	Expenditure ($)	
Spectators									
Nelson-Tasman	*8,348*	*0.1*	*41*		*4,174*	*0.1*	*41*		
Rest of New Zealand	2,817	1.5	215	908,609	1,409	1.5	215	454,304	1,362,913
International	840	2.7	345	782,460	420	2.7	345	391,230	1,173,690
Sub-total spectators	*12,005*			*1,691,069*	*6,003*			*845,534*	*2,536,603*
Players, VIP and media									
Players	84	3	363	91,476	84	3	363	91,476	182,952
Support staff	12	3	363	13,068	12	3	363	13,068	26,136
Match officials	12	2	363	8,712	12	2	363	8,712	17,424
Inspection visit	4	1.5	363	2,178	4	1.5	363	2,178	4,356
CWC officials	10	2	363	7,260	10	2	363	7,260	14,520
National delegates	12	2	363	8,712	12	2	363	8,712	17,424
Sub-total players, VIP, media	*134*			*131,406*	*134*			*131,406*	*262,812*
Scenario 1: total expenditure	**12,139**			**1,822,475**	**6,137**			**976,940**	**2,799,415**
Scenario 1a: hosting a team									
Players	21	20	363	152,460	21	20	363	152,460	304,920
Support staff	6	20	363	43,560	6	20	363	43,560	87,120
Less players/support staff				-52,272				-52,272	-104,544
Sub-total for hosting a team				*143,748*				*143,748*	*287,496*
Scenario 1a : Total expenditure				**1,966,223**				**1,120,688**	**3,086,911**

Source: BERL

Based on the assumptions made in the previous section, it is estimated that there will be a total of 18,100 visitors to pool and warm up matches. Of these visitors, 12,000 are estimated to come to the

two pool matches and 6,000 to the two warm up matches. In total, 5,600 out-of-region visitors (3,800 for pool matches and 1,800 for warm up matches) are expected to attend.

The majority of visitors will be spectators, 12,000 for pool matches and 6,000 for warm up matches. Players, VIP and media remain the same at 130 people at pool and warm up matches.

It is estimated that the 5,600 out-of-region visitors will spend a total of $2.8 million in the Nelson-Tasman region due to the two pool and warm up matches. This is new expenditure spent directly within the region as a result of the pool and warm up matches and is used to assess the economic impact.

If the Nelson-Tasman hosted a team, the number of out-of-region visitors increases to 5,650 people and expenditure increases to $3.1 million.

3.2.2 Scenario 2 – Low: Out-of-region expenditure

Table 3.8 shows the estimated number of people, length of stay, daily spend and total expenditure of visitors to both the pool and warm up matches. It also shows the additional expenditure generated from the Nelson-Tasman region hosting a team.

Table 3.8 Spending projection for Scenario 2 – Low

Scenario 2 - Tier One team (low)	Pool matches (X2)				Warm up matches (X2)				Total expenditure ($)
	Number of visitors	Length of stay (days)	Daily spend ($)	Expenditure ($)	Number of visitors	Length of stay (days)	Daily spend ($)	Expenditure ($)	
Spectators									
Nelson-Tasman	*6,154*	*0.1*	*36*		*1,538*	*0.1*	*36*		
Rest of New Zealand	1,436	1.5	216	465,231	359	1.5	216	116,308	581,538
International	400	2.7	348	375,840	100	2.7	348	93,960	469,800
Sub-total spectators	*7,990*			*841,071*	*1,997*			*210,268*	*1,051,338*
Players, VIP and media									
Players	84	3	363	91,476	84	3	363	91,476	182,952
Support staff	12	3	363	13,068	12	3	363	13,068	26,136
Match officials	12	2	363	8,712	12	2	363	8,712	17,424
Inspection visit	4	1.5	363	2,178	4	1.5	363	2,178	4,356
CWC officials	10	2	363	7,260	10	2	363	7,260	14,520
National delegates	12	2	363	8,712	12	2	363	8,712	
Sub-total players, VIP, media	*134*			*131,406*	*134*			*131,406*	*262,812*
Scenario 2: total expenditure	**8,124**			**972,477**				**341,674**	**1,314,150**
Scenario 2a: hosting a team									
Players	21	20	363	152,460	21	20	363	152,460	304,920
Support staff	6	20	363	43,560	6	20	363	43,560	87,120
Less players/support staff				-52,272				-52,272	
Sub-total for hosting a team				**143,748**				**143,748**	**287,496**
Scenario 2a : Total expenditure				1,116,225				485,422	**1,601,646**

Source: BERL

Based on the assumptions made in the previous section, it is estimated that there will be a total of 10,100 visitors to pool and warm up matches. Of these visitors, 8,100 are estimated to come to the two pool matches and 2,000 to the two warm up matches. In total, there were 2,400 out-of-region visitors (1,970 for pool matches and 460 for warm up matches).

The majority of visitors are from spectators 8,000 for pool matches and 2,000 for warm up matches. Players, VIP and media remain the same at 134 people at pool matches and warm up matches.

It is estimated that the 2,400 out-of-region visitors will spend a total of $1.3 million in the Nelson-Tasman region due to the two pool and warm up matches. This is new expenditure spent directly within the region as a result of the pool and warm up matches and is used to assess the economic impact.

If the Nelson-Tasman hosted a team, the number of out-of-region visitors increases to 2,460 people and expenditure increases to $1.6 million.

4. Economic Impact Analysis

The additional expenditure generated in the Nelson-Tasman economy from hosting two pool and warm up matches could be between $2.2 million to $4.6 million depending on the quality of the teams playing. This expenditure could generate between $1.1 million and $2.4 million in GDP and create employment for 19 to 40 FTEs.

If the Nelson-Tasman also hosts a team, then total direct spending would increase to between $2.7 million and $5.1 million. This expenditure could generate between $1.3 million and $2.6 million in GDP and create employment for 23 to 44 FTEs.

This section provides the economic value of the additional expenditure from out-of-region visitors on the Nelson-Tasman region under Scenario 1 and Scenario 2. Under each scenario, the additional impact of hosting a team is added.

4.1 Economic Impact of Scenario 1 on the Nelson-Tasman region – high quality matches

4.1.1 Economic impact on the Nelson-Tasman region from two pool matches and two warm up games

Table 4.1 presents the economic impact on the Nelson-Tasman region based on spending of $2.8 million by out-of-region visitors during the two pool and warm up matches.

Table 4.1 Economic impact of Scenario 1 - high

Scenario 1 - high	Direct	Total
Expenditure ($m)	2.8	4.6
GDP ($m)	1.4	2.4
Employment (FTEs)	30	40

Source: BERL

Adding indirect and induced effects to the direct spending of $2.8 million results in total output of $4.6 million.

Based on this increased expenditure, the CWC will contribute $2.4 million to regional GDP and created employment for 40 FTEs for one year.

4.1.2 *Scenario 1 plus hosting a cricket team*

Table 4.2 presents the economic impact on the Nelson-Tasman region based on spending of $3.1 million by out-of-region visitors if the Nelson-Tasman hosted a team on top of holding two pool and warm up matches.

Table 4.2 Economic impact of Scenario 1 + hosting

Scenario 1 + hosting	Direct	Total
Expenditure ($m)	3.1	5.1
GDP ($m)	1.5	2.6
Employment (FTEs)	33	44

Source: BERL

Adding indirect and induced effects to the direct spending of $3.1 million results in total output of $5.1 million.

Based on this increased expenditure, the CWC will contribute $2.6 million to regional GDP and create employment for 44 FTEs for one year.

4.2 Economic Impact of Scenario 2 on the Nelson-Tasman region – low quality matches

4.2.1 *Economic impact on the Nelson-Tasman region from holding two pool matches and two warm up games*

Table 4.3 presents the economic impact on the Nelson-Tasman region based on spending of $1.3 million by out-of-region visitors during the two pool and warm up matches.

Table 4.3 Economic impact of Scenario 2 - low

Scenario 2 - low	Direct	Total
Expenditure ($m)	1.3	2.2
GDP ($m)	0.7	1.1
Employment (FTEs)	14	19

Source: BERL

Adding indirect and induced effects to the direct spending of $1.3 million results in total output of $2.2 million.

Based on this increased expenditure, the CWC will contribute $1.1 million to regional GDP and create employment for 19 FTEs for one year.

4.2.2 *Scenario 2 plus hosting a cricket team*

Table 4.2 presents the economic impact on the Nelson-Tasman region based on spending of $1.6 million by out-of-region visitors if the Nelson-Tasman hosted a team on top of holding two pool and warm up matches.

Table 4.4 Economic impact of Scenario 2 + hosting

Scenario 2 + hosting	Direct	Total
Expenditure ($m)	1.6	2.7
GDP ($m)	0.8	1.3
Employment (FTEs)	17	23

Source: BERL

Adding indirect and induced effects to the direct spending of $1.6 million results in total output of $2.7 million.

Based on this increased expenditure, the CWC will contribute $1.3 million to regional GDP and create employment for 23 FTEs for one year.

4.3 Scenario Comparison

Table 4.5 compares the economic impact of the two scenarios with the addition of hosting. The economic impact is expressed in terms of expenditure, GDP and employment.

Table 4.5 Comparison of expenditure, GDP and employment for each scenario

Expenditure ($m)	Direct	Total
Scenario 1 - high	2.8	4.6
Scenario 1 - high + hosting	3.1	5.1
Scenario 2 - low	1.3	2.2
Scenario 2 - low + hosting	1.6	2.7

GDP ($m)	Direct	Total
Scenario 1 - high	1.4	2.4
Scenario 1 - high + hosting	1.5	2.6
Scenario 2 - low	0.7	1.1
Scenario 2 - low + hosting	0.8	1.3

Employment (FTEs)	Direct	Total
Scenario 1 - high	30	40
Scenario 1 - high + hosting	33	44
Scenario 2 - low	14	19
Scenario 2 - low + hosting	17	23

Source: BERL

Under Scenario 1 – High, the additional expenditure of $2.8 million generates direct GDP and employment of $1.4 million and 30 FTEs for one year. Adding indirect and induced effects increases GDP to $2.4 million and employment to 40 FTEs for one year. Including hosting sees additional expenditure of $3.1 million generate direct GDP and employment of $1.5 million and 33 FTEs for one year. Adding indirect and induced effects increases GDP to $2.6 million and employment to 44 FTEs for one year.

Under Scenario 2 – Low, the additional expenditure of $1.3 million generates direct GDP and employment of $700,000 and 14 FTEs for one year. Adding indirect and induced effects increases GDP to $1.1 million and employment to 19 FTEs for one year. Including hosting sees additional expenditure of $1.6 million generate direct GDP and employment of $800,000 and 17 FTEs for one year. Adding indirect and induced effects increases GDP to $1.3 million and employment to 23 FTEs for one year.

In hosting a team under the two scenarios, there is an additional expenditure of $300,000 (i.e. on top of the added expenditure of having the four games), which generates an additional $100,000 in GDP and 3 FTEs.

5. Appendix – Multiplier Analysis

This multiplier analysis uses multipliers derived from inter-industry input-output tables. These input-output tables are purchased from Butcher Partners, Canterbury – a recognised source for regional input-output tables and multipliers.

Multipliers allowed us to identify the direct, indirect and induced effects in terms of output (GDP) and Full Time Equivalent (FTE) employment.

5.1.1 Measures

5.0.1 Gross Output Multipliers

Gross output is the value of production, built up through the national accounts as a measure, in most industries, of gross sales or turnover. This is expressed in $ million at constant prices. Gross output is made up of the sum of:

- compensation of employees (i.e. salaries and wages)
- income from self employment
- depreciation
- profits
- indirect taxes less subsidies
- intermediate purchases of goods (other than stock in trade)
- intermediate purchases of services.

5.0.2 Value added (GDP) multipliers

Value added multipliers measure the increase in output generated along the production chain, which, in aggregate, totals Gross Domestic Product (GDP). Value added is made up of the sum of:

- compensation of employees (i.e. salaries and wages)
- income from self employment
- depreciation
- profits
- indirect taxes less subsidies.

5.0.3 Employment Impact multipliers

Employment impact multipliers determine the number of FTE roles that are created for every $1 million spent in an industry for one year. It provides a measure of total labour demand associated

with Gross Output. An FTE is the percentage of time an employee works represented as a decimal. A full-time position is 1.00; a part-time position is 0.50.

5.1.2 Direct, indirect and induced effects

The underlying logic of multiplier analysis is relatively straightforward. An initial expenditure (direct effect) in an industry creates flows of expenditures that are magnified, or "multiplied", as they flow on to the wider economy. This occurs in two ways:

The industry purchases materials and services from supplier firms, who in turn make further purchases from their suppliers. This generates an indirect effect.

Persons employed in the direct development and in firms supplying services earn income (mostly from wages and salaries, but also from profits) which, after tax is deducted, is then spent on consumption. There is also an allowance for some savings. These are the induced effects. Hence, for any amount spent in an area (direct effect), the actual output generated from that spend is greater once the flow on activity generated (indirect and induced effects) is taken into account.

5.1.3 Limitations of multiplier analysis

5.0.1 Partial equilibrium analysis

Multiplier analysis is only a "partial equilibrium" analysis, assessing the direct and indirect effects of the development being considered, without analysing the effects of the resources used on the wider national economy. In particular, it assumes that the supply of capital, productive inputs and labour can expand to meet the additional demand called forth by the initial injection and the flow on multiplier effects, without leading to resource constraints in other industries. These constraints would lead to price rises and resulting changes in overall patterns of production between industries. To assess inter-industry impacts in full would require economic modelling within a "general equilibrium" framework. Applying such models becomes more relevant where the particular development is considered significant within the overall economy.

5.0.2 Additionality

Related to partial equilibrium, using multipliers for economic impact assessments assumes that the event is something that would not have been undertaken anyway and that it will not displace existing activity. That is, the event is additional to existing activity. If it does either of the above, then the economic impact is less than that determined by the multiplier and it would be necessary to subtract both the activity that would have occurred anyway and the displacement effect.

5.0.3 Impact

Again related to "partial equilibrium", multiplier analysis assumes that an event will not have an impact on relative prices. However, in a dynamic environment, it can be assumed that a large event would have an impact on demand and supply and hence prices. Hence, the larger the event and the more concentrated it is in a single industry or region, the more likely it is that the multipliers would give an inaccurate analysis of impacts. For example, if multiplier analysis was used to determine the effect of residential building construction nationally it would likely be inaccurate as residential building construction accounts for over 6 percent of GDP.

5.0.4 Aggregation

Industries outlined in input-output tables are aggregates of smaller sub-industries. Each sub-industry has unique inputs and outputs. The higher the level of aggregation the less accurate these inputs and outputs become. Thus, if determining the multiplier effect of a very specific event using highly aggregated data, there will be a lower level of accuracy. Similarly, if an event encompasses a range of industries and multipliers from a single