NATURAL DISASTERS AND PROPERTY MARKETS: A GLOBAL ISSUE

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Abstract

The past decade has seen an increase in the number of significant natural disasters that have seen considerable loss of life and damage to all property markets in the affected areas. In many cases these natural disasters have not only caused significant property damage but in numerous cases have resulted in the total destruction of the property in the location.

With these disasters attracting considerable media attention, the public are more aware of where these affected property markets are, as well as the overall damage to properties that have been damaged or destroyed.

This heightened level of awareness has to have an impact on the participants in the property market, whether, a developer, vendor, seller or investor.

To assess this issue a number of residential property markets that have been affected by significant natural disasters over the past two years have been analysed to determine the overall impact of the disaster on buyer and vendor behaviour, as well as prices in these residential markets.

This paper will be based on data from the Christchurch earthquakes in September 2010 and February 2011, the Brisbane flood in January 2011 and the North Queensland cyclones in February 2011. All these natural disasters resulted in considerable loss of life and partial and total devastation of considerable residential property sectors. Data will cover sales listings, sales transactions, rental listings and sales performance on a location and socio-economic basis.

Keywords: *Natural disasters, floods, earthquakes, cyclones, residential property, property returns, buyer and seller behaviour, property sales.*

Introduction

As world populations increase a greater percentage of a country's land area is taken up with increased urban development and an increase in infrastructure requirements.

Increasing population also results in an increase in the number of residential properties and commercial properties, often in areas that in the past have been considered unsuitable for urban development. This increased number of properties, development in marginal areas and changes in water collection and flows has led to the situation where; worldwide, commercial and residential property markets are becoming more exposed to the consequences of natural disaster.

A severe climatic or geological event that would have resulted in some inconvenience 50 years ago can now be a natural disaster in many cities and countries. Following such natural disasters there is often a tally of the cost of the disaster in respect to the number of lives lost, injuries and infrastructure replacement costs and the cost of damaged and destroyed property. However, the actual impact of such disasters on the minimally affected or nearby non affected property markets and consumer behaviour in those property markets is rarely quantified.

There have been a number of studies detailing the short term and long term impact of floods on property markets on property prices and values (Proverbs, Eves, 2002b, 2004, 1999), bushfires (Eves 2002a, Warren Myers, 2010) hurricanes/ cyclones and earth quakes.

This paper will analyse three residential property markets before and after three different types of natural disasters to determine the response of buyers and sellers in those markets to the impact of the disaster on the residential property market in question. The initial analysis will concentrate on changes in sale listings, rental listings, sales volume and median house prices. The final section of this paper will compare these results across the different natural disasters to determine differences and similarities in the residential property market response.

Defining Natural Disasters

A natural disaster has been defined as climatic or geological events that cause great financial and emotional hardship for individuals or communities and can lead to loss of life (Australian Government, 2012). A more definitive definition is provided by Guha-Sapir et al (2004) being:

"A situation or event of overwhelming local capacity, necessitating a request to the national or international level for external assistance, or is recognised as such by a multinational agency or by at least two sources."

These natural disasters can also be defined by the extent of damage, loss of life or affectation. According to EM Dat (2012) to classify as a natural disaster the event must:

- Result in loss of life greater than 10
- A minimum of 100 people have to be affected
- A declaration of a state of emergency has to be declared

or

- A call for international assistance needs to be made.

Natural disaster can be weather or climate based or geological events. The climate and weather based natural disasters include floods, wind storms and drought related events, with the geological events

being: earthquakes, volcanic eruptions and tidal waves. A detailed breakdown of natural disasters is shown in Table 1.

Statistics collected by Guha-Sapir et al (2004) show that during the period 1900 to 2003, there were a total of 9,000 events that could be classified as natural disasters and of these more than 80% actually occurred in the period 1973 to 2003.

Since 2003, this increasing trend in natural disasters has been continuing, with some of the most severe climatic natural disaster occurring in the past 10 years, including the 2011 Japan earthquake and tsunami, Hurricane Katrina in 2005, the 2004 Indonesian earthquake and tsunami and the Haiti earthquake.

With increasing populations and the subsequent continued urban development, a severe climatic or geological natural disaster has the potential for increasing loss of life, injury and loss of infrastructure and property.

Cost of natural disasters

The actual severity of a natural disaster is measured by both the loss of life and injury to the population and the economic cost to the community.

Based on loss of life, the most severe natural disasters have occurred in Asia, as shown in Table 2, with earthquakes and floods resulting in the greatest loss of life.

Figure 1 provides a list of the worst natural disasters based on insured and economic loss. This list varies significantly with Table 2, as natural disasters in countries with higher populations and less developed property sectors and infrastructure do not have the same level of economic loss compared to loss of life. The 2004 Indonesian tsunami ranks 7th in loss of life but does not rank in the list of worst economic natural disasters, as the economic loss of this disaster was only US $14 billion. Figures stated by EM DAT (2012) also confirm that over the past 30 years there has been considerable loss of life from major droughts in third world countries, but the actual economic loss in these drought disasters has not been as significant as the economic losses suffered in the more recent climate and geological natural disasters.

Figure 1 also confirms that the economic loss from earthquakes (including subsequent tsunamis) have been the most significant since 1965, representing a total of 10 of the most severe natural disasters from 1965 to 2011. During the same period floods resulted in five of the worst

Table 1: Natural Disaster Types and Occurrence

Flood Events	Windstorms	Geological	Drought Related
Floods (84%)	Storms (31%)	Earthquakes (83%)	Drought (58%)
Landslides (8%)	Typhoons (20%)	Volcanic eruptions (16%)	Bushfire (21%)
Mudflows (5%)	Cyclones (16%)	Tidal waves (1%)	Extreme temp. (21%)
Avalanches (3%)	Hurricanes (13%)	Tsunamis	
	Winter storms (9%)		
	Tornadoes (7%)		
	Tropical storms (4%)		

(Source: EM DAT 2012)

economic natural disasters and severe storms (hurricanes/cyclones) three of the most severe natural disasters over this time period.

According to Reibeek (2005), the average annual economic cost of a natural disaster as recently as the 1950s was only US$3.9 billion, but these costs have been increasing since the 1950s. Since 1970, there have been 14 years where the average annual economic costs of natural disasters has exceeded US$50 billion (Reibeek, 2005).

It is also important to note that the worldwide economic cost of natural disaster during 2011 was estimated to be US$380 billion, with US$210 billion attributed to the Japan earthquake alone. Munich Re (one of the largest reinsurance companies in the world) states that the number of natural disaster due to geological events has been relatively stable since 1960, but the number of natural disasters due to climate factors has been increasing (New Scientist, 2012).

Table 2: Worst Natural Disaster: Loss of Life

Rank	Death toll (estimate)	Event	Location	Date
1	1,000,000 - 2,500,000*[1]	1931, China floods	China	July, November, 1931
2	900,000 - 2,000,000[2]	1887, Yellow River flood	China	September, October, 1887
3	830,000[3]	1556, Shaanxi earthquake	Shaanxi Province, China	January 23, 1556
4	500,000[1]	1970, Bhola cyclone	East Pakistan (now Bangladesh)	November 13, 1970
5	316,000[4]	2010, Haiti earthquake	Port-au-Prince, Haiti	January 12, 2010
6	300,000[5]	1839, India Cyclone	India	November 25, 1839
7	230,210 - 310,000	2004 Indian Ocean Tsunami	Sumatra, Indonesia and also affected India, Sri Lanka, Maldives	December 26, 2004
8	250,000 - 300,000	526 Antioch earthquake	Antioch, Byzantine Empire (now Turkey)	May 5,26
9	242,419 (the death toll has been estimated to be as high as 665,000)[1]	1976 Tangshan earthquake	Tangshan, Hebei, China	July 28, 1976
10	234,117[1]	1920 Haiyuan earthquake	Haiyuan, Ningxia-Gansu, China	December 16, 1920

Source: Wikipedia 2012

A study by Chen (2004) found that cyclones have accounted for approximately 30% of all damage to residential property in the 20th century, followed by flood 20%, bushfires approximately 19% and hailstorms 11%.

Natural disaster in Australia/ New Zealand

Different geographic regions have shown differing occurrences and types of natural disasters and this is the case in relation to Australia and New Zealand. Severe natural disasters in Australia and new Zealand over the past 35 years have included fatal bushfires in Sydney, Canberra and Victoria, floods in Queensland, Brisbane and northern NSW, cyclones in Northern Queensland and in New Zealand earthquakes in Napier and Christchurch. Each of these events has seen significant loss of life, extreme damage and costs associated with the damage to infrastructure, buildings and personal property.

Over the past ten years various residential property markets throughout Australia in general and NSW in particular have been subject to substantial natural disasters. These occurrences have included floods, bushfires and hailstorms. In extreme cases the actual rectification costs can be measured in the $billions for property losses alone and there is now additional losses in relation to global economies and stock markets in affected countries (Worthington, 2008).

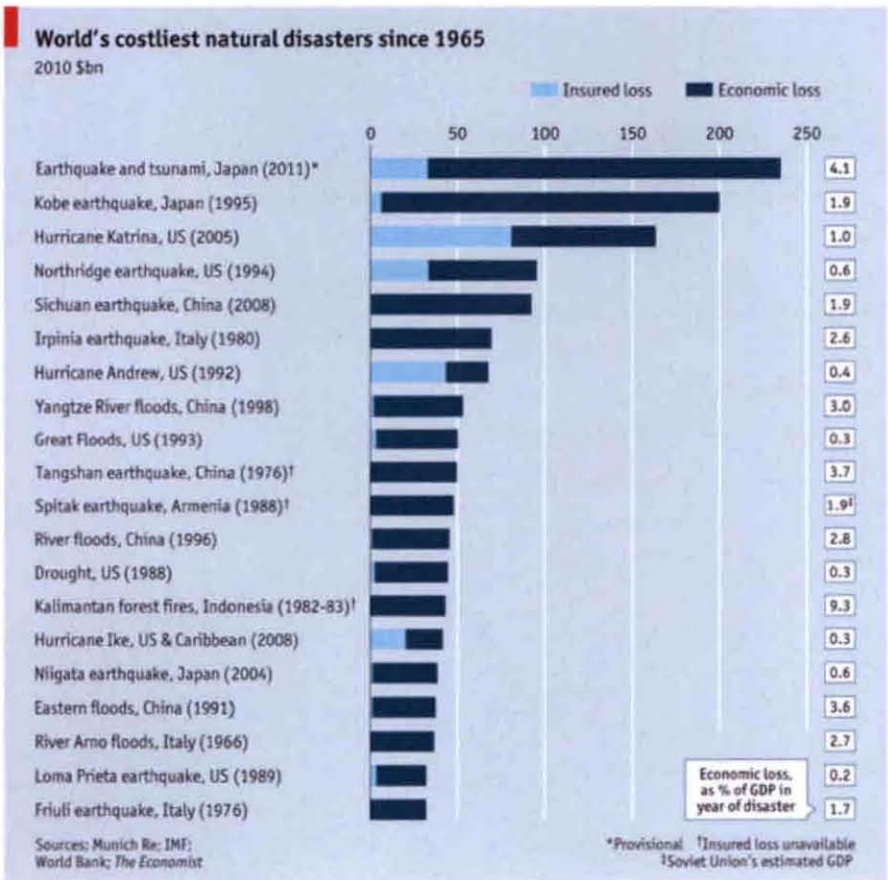

Figure 1: Worst natural Disasters: 1965 to 2010

Natural disasters such as severe storms and hailstorms have tended to be very indiscriminate in relation to frequency and the actual location of damage, whereas the nature of bushfire and flooding tends to be more defined, with risk prone areas more easily identifiable (Eves, 2002, 2004a, 2004b).

Although these extreme natural disasters tend to be infrequent, occurrences of floods and bushfires in residential property areas are becoming more common, particularly as urban sprawl encroaches closer to National Parks, State Recreation Parks and State Forests.

Considerable work has been carried out on flood effects on property markets by Bell (1999), Donnelly (1988), Skrantz and Strickland (1987) in the US, and Chou and Shih (2001) in Taiwan. Fibbens (1994), Lambley and Cordery (1991) and Eves (2004; 2002) have carried out studies in relation to the effect of flooding on residential property values in the Sydney region, including the tracking of flood prone property values over time. However, limited rigorous research has been carried out in relation to the impact of bushfires and earthquakes on residential property markets in the main Australian and New Zealand urban regions.

Table 3 ranks these most severe natural disasters based on total damage costs, normalised to 2010 values. This table shows that during this period the most costly natural disaster based on 2011 prices have been the 2011 eastern Australian floods followed by the Newcastle earthquake. Damage from five (5) of the most severe hailstorms have totalled $8.86 billion during the same period, followed by bushfires $4,466.

Table 3: Natural Disasters in Australia: 1974-2011

Year	Natural Disaster Event	Location	Normalised Loss (2011) (AUD$ millions)
2011	Flooding	Eastern Australia	5,600
1989	Earthquake	Newcastle	4,810
1974	Cyclone	Darwin	4,083
1999	Hailstorm	Sydney	3,691
2009	Bushfire	Victoria	2,643
1974	Flood	Brisbane	2,338
2010/2011	Earthquake	Christchurch	2,300
1985	Hailstorm	Brisbane	1,913
1983	Bushfire	Victoria/South Australia	1,823
1990	Hailstorm	Sydney	1,644
1973	Cyclone	QLD/NT/WA	1,286
1976	Hailstorm	Sydney	817
1986	Hailstorm	Sydney	794
1984	Flood	Sydney	738

Source: Sharechat, 2012, Australian Government, 2011; Victorian Government, 2010; Crompton and McAneney, 2008; NSW Fire Brigades, 2003; Department of Community Services, 2002.

In all the discussion above the actual economic loss has been calculated on the physical loss of property (real estate and personal), cost to repair infrastructure and property and business losses. One aspect of a natural disaster that is not addressed in these stated losses is the potential loss in value for property that has been subject to minor damage or in areas that are perceived higher risk following the natural disaster.

This paper will now analyse the impact that a natural disaster has on residential property values following a major natural disaster and the response to these natural disasters by participants in the respective residential property markets, particularly focussing on the 12 months following such events.

Study areas and events

The study focuses on three separate natural disasters that occurred in 2010 and 2011. These natural disasters were significant, with loss of life and severe property damage in all cases. These events were:

- Christchurch earthquakes 2010 and 2011
- Brisbane floods 2011
- North Queensland cyclone Yasi 2011.

In all these events the damage to infrastructure and property exceeded $AUD 2 billion and the events resulted in the damage or destruction of significant numbers of houses. Table 4 shows that the extent of the damage to the residential housing markets in the affected areas was significant.

These figures represent substantial portions of the residential markets in these affected suburbs, cities and towns and therefore provide a sound basis to examine the impact of these natural disasters on residential property markets and buyer/ vendor behaviour.

Research Methodology

Data has been collected for the Brisbane flood and North Queensland cyclone events for the month prior to the event and the following 12 months after the event in respect to average weekly sales and rental listings. Sales data has been collected for the 12 months prior to the event and the 12 months after the flood and cyclone. In the case of the Christchurch study, data for the 12 months prior to and following the event have been obtained.

Table 4: Natural Disaster Property Losses: Study Locations

Location	Houses destroyed/ uninhabitable	Houses damaged
Brisbane	11,900	14,700
North Queensland	150	2,925
Christchurch	10,000	100,000

The data has been analysed to determine:

- The change in the number of average weekly residential property sales listings over the study period.
- The change in the number of average residential property rental listings over the study period
- Volume of residential property sales over the period and comparison with the previous 12 months
- Changes in median house prices in the affected locations (North Queensland and Christchurch)
- Comparison of median price trends between flood affected and non-flood affected suburbs in Brisbane.

Sales data has been obtained from RP Data Pty Ltd for Brisbane and North Queensland and real Estate Institute of NZ for the Christchurch sales. All sales listings and rental listings have been obtained from realestate.com.au and realestate.co.nz.

Results and Discussion

The research results will be discussed on a location basis with the conclusions providing a comparison between the various natural disasters and their respective property market performance. For this paper, the focus will be on free standing residential property, with some general comment on the residential unit market in the subject areas if applicable to the results. A full analysis of the residential unit/townhouse market in the subject areas will form part of another research paper.

Brisbane Floods

The Brisbane flood in January 2011 was the first major flood in Brisbane since 1974. The nature of the flood, although lower than the 1974 level, actually resulted in greater property losses compared to previous floods.

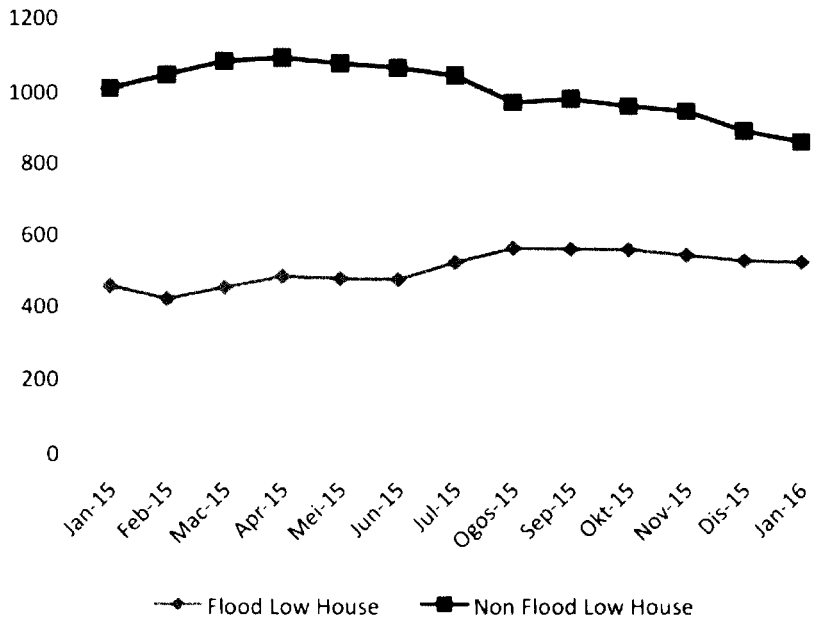

Figure 2: Socio-Economic comparisons: House Sale Listings Low Value Suburbs

For this study the results have been presented on the basis of the overall classification of suburbs on a value basis. In all the study compares a total of 48 Brisbane suburbs, 24 suburbs that had flooding issues and 24 suburbs that were not flood affected in anyway. Not all houses in the flood affected suburbs were inundated. However, extensive media coverage of the flood made people aware that these suburbs were subject to flooding.

Sales listings Houses

Figures 2 to 4 show the average weekly residential house sales listings for the month prior to the floods and the following 12 months after the floods. Each figure compares listing for flood affected suburbs and non-flood affected suburbs.

From Figure 2, it can be seen that in the month following the flood, there was a significant drop in the number of sales listings in the low value flooded suburbs but a corresponding increase in sales listings in the flood free suburbs. However, after one month the number of sale listings in the flood affected low value suburbs started to increase, with this increasing trend continuing until October 2011. During the same period the actual number of properties listed in the flood free lower value suburbs was decreasing. This decreasing trend in the non-flood suburbs also reflected the general softening of the Brisbane housing market over that period.

In the middle value suburbs there was a decrease in sales listings for both flood affected and non-flood suburbs in the two months following the floods. Again, while the number of sales listing continued to decline for the non-flood suburbs throughout 2011, there was an increasing trend for property listings in the flood affected middle value suburbs. This again suggests that despite a softening of the residential property market, people in the flood affected suburbs were more anxious to sell.

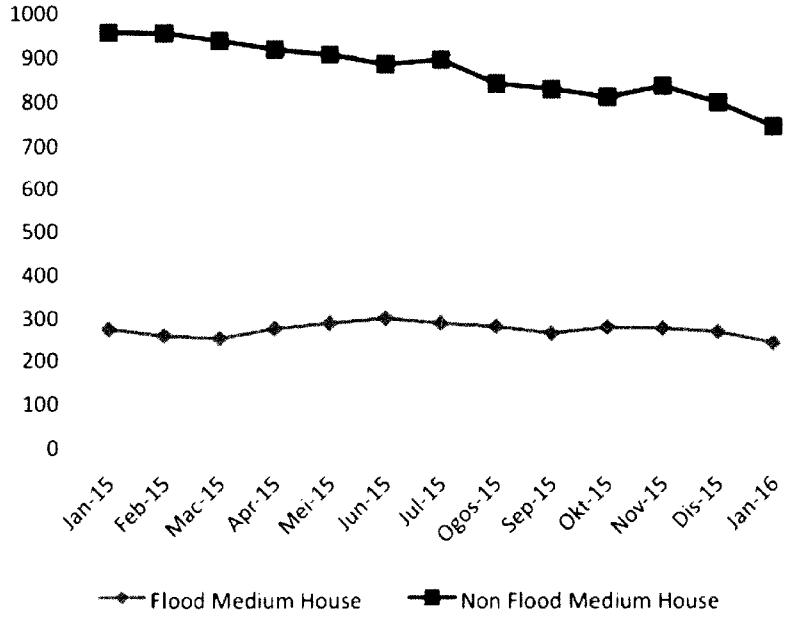

Figure 3: Socio-Economic comparisons: House Sale Listings: Middle Value Suburbs

Figure 4 shows the trend in house sale listings for the high value suburbs. Interestingly, the impact of the floods on sale listings was not as pronounced in these higher value suburbs compared to the lower and middle value suburbs. Both flood and non-flood suburbs showed a declining trend in sales listings from January 2011 to September 2011, at which point both saw an increasing trend in sales listings. Figure 4 also shows that the trend in sales listing were very similar (although volumes were different), indicating that the decision to sell was more a market decision rather than the impact of the flood.

Rental Listings Houses

Any significant flood event causes housing stress for the affected parties, with a requirement to seek alternate accommodation pending repair to the affected house. Based on this assumption, it is expected that immediately after a severe flood there will be a decrease in the number of residential properties being offered for rent, as this short term demand issue is resolved.

Figures 5, 6, and 7 show the change in average weekly residential house rental listings, from January 2011 to January 2012, across suburbs in the study area.

Regardless of the value status of the flood and non-flood affected suburbs, there was a decrease in the number of residential houses available for rent immediately after the flood (within one week). However, after the first week following the flood, the market reaction differed according to the socio-economic status of the suburb. Figure 5 shows that in the first month following the flood there was a drop of approximately 50 house rentals in both non-flood and flood affected lower value suburbs. However, after 2 months a considerably higher number of rental houses were listed for rent in the flood affected low value suburbs compared to a trend of declining house availability for rent in the non-flood lower

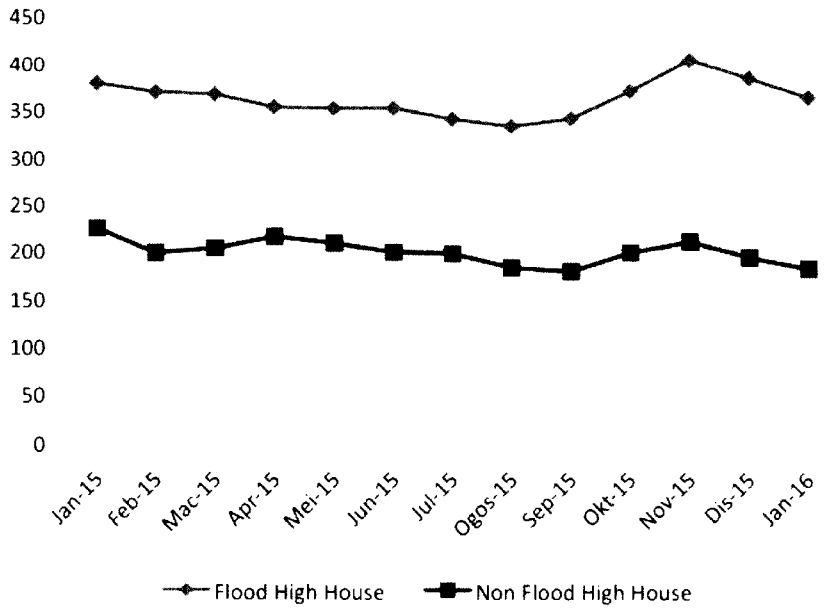

Figure 4: Socio-Economic comparisons: House Sale Listings: High Value Suburbs

value suburbs. This indicates people renting in these lower value flood affected areas took the opportunity to move to other areas after the flood.

The impact of the floods on the middle value suburbs of Brisbane does not appear to be as significant as the low and high value suburbs. Figure 6 shows that while the volume of rental properties available in the suburbs was different, the monthly trend in rental listings was reasonably similar. The high value rental property market in the flood free suburbs has shown a relatively stable number of houses available for rent over the 12 months following the flood (refer to Figure 7).

However, in the two months following the flood, the number of houses available for rent in the high value flood affected suburbs decreased from a weekly average of 198 homes to 100 homes. This suggests that many of the home owners whose properties were flooded immediately sought nearby rental accommodation until their properties could be repaired.

It is also interesting to note that the number of rental properties being listed in all suburbs increased after 6 months from the flood, which would suggest that owners of the flood affected properties only took short term leases to cover the repair period for their own homes.

Median Price

Although the study compares suburbs that were subject to flooding and suburbs that were flood free, it is important to note that not all houses in the flood affected suburbs were actually affected in any way. However, based on previous studies by Proverbs (2006) and Eves (2004, 2006) the stigma of flooding can also have an effect of property in the immediate vicinity of the severe flood damage.

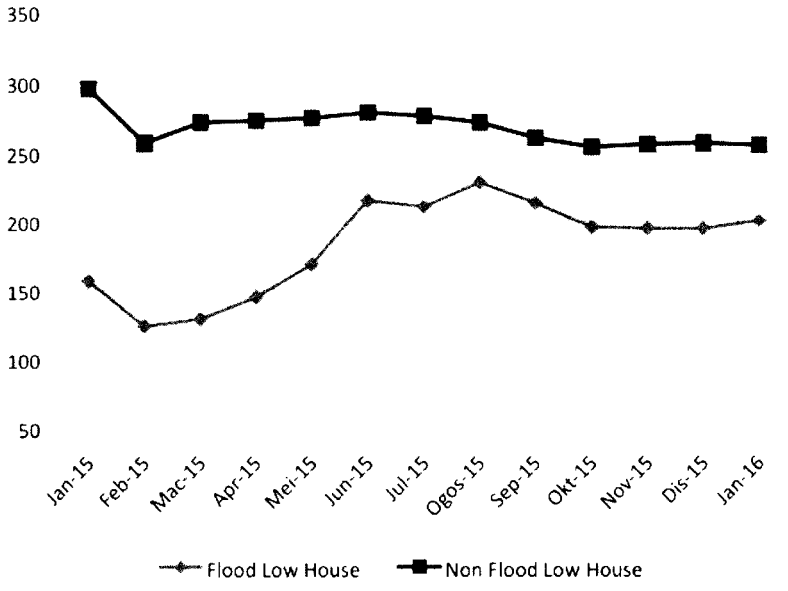

Figure 5: Socio-Economic comparisons: House Rental Listings Low Value Suburbs

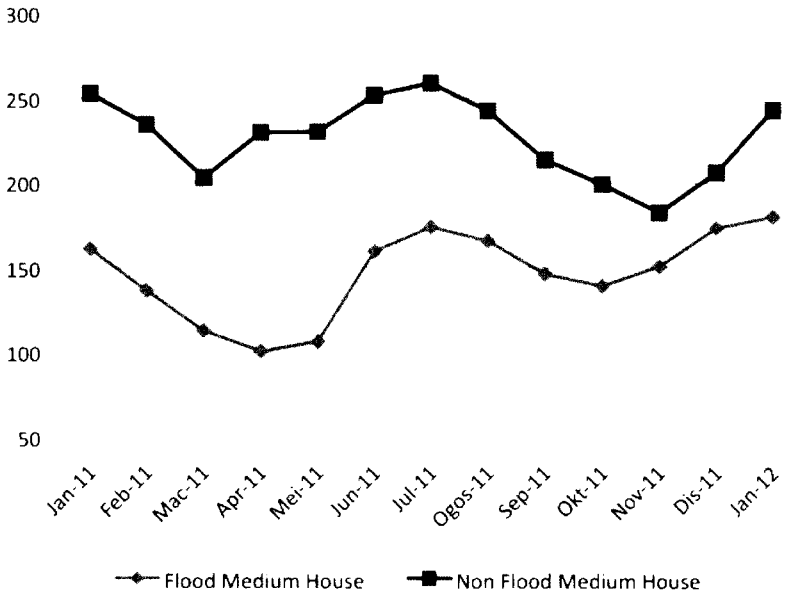

Figure 6: Socio-Economic comparisons: House Rental Listings: Medium Value Suburbs

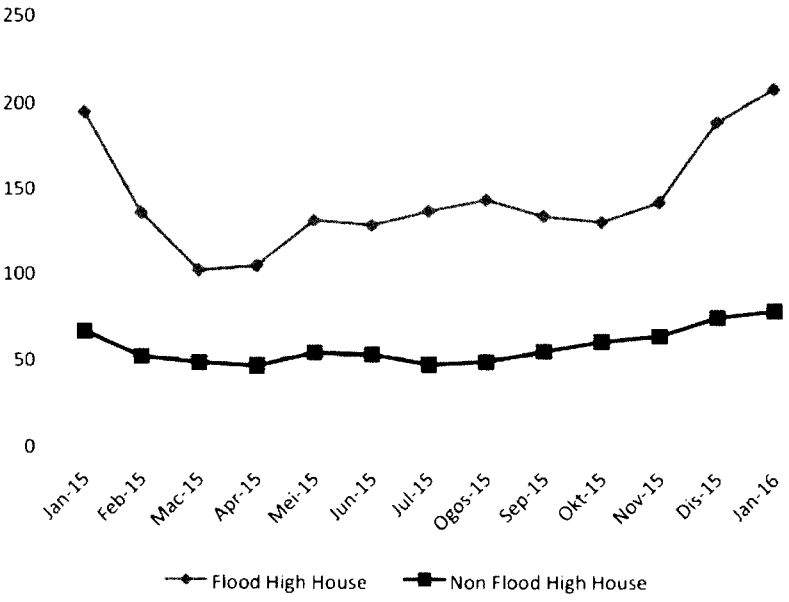

Figure 7: Socio-Economic comparisons: House Rental Listings: High Value Suburbs

Table 5: Brisbane Median House Price Comparison

2011	Low Flood	Low Non-Flood	Med Flood	Med Non-Flood	High Flood	High Non-Flood
Q1	423000	409333	597667	545667	882333	792333
Q2	327333	385667	620333	514000	816000	723333
Q3	345333	376000	584667	516000	750000	739333
Q4	388667	378000	608333	517000	741667	736000
2011 Return	-8.12	-7.65	1.78	-5.25	-15.94	-7.11

Table 5 compares the change in the quarterly median price for houses in the study area for the 12 months following the flood. This table shows that the low value flood affected suburbs had a 22.7% fall in median house prices in the three months immediately following the flood. In this period the only sector that did not show a decrease in the median house price were the flood affected medium value suburbs.

This table also shows that over the 12 month period following the floods there has been a general decline in the median house price for all sectors other than the flood affected medium value suburbs. This can be explained to some extent by the type of flood affectation across the flood prone suburbs. The higher value suburbs were all on or near the Brisbane River and the lower value suburbs affected by the floods were all in very low lying parts of Brisbane and these low lying areas covered a significant portion of the affected suburbs. Only parts of the medium value suburbs were close to the Brisbane River or low lying.

In the 12 months after the flood, the most significant difference in the median price between flood affected and flood free house prices has been in the high value suburbs of Brisbane, which recorded a fall in median price of 15.94%, compared to a decline of 7.11% for non-flood high value suburbs for the same period.

Actual sales in the various suburbs have also had an impact on the median price for houses in those areas. Table 6 compares the sales transaction volume between

Table 6: Sales Transactions Brisbane 2011

	2011/1	2011/2	2011/3	2011/4
Flood Total Houses	84	133	104	121
Non Flood Total Houses	177	237	194	177
Flood Low House	25	52	40	47
Non Flood Low House	72	102	84	60
Flood Medium House	29	49	39	52
Non Flood Medium House	81	113	87	93
Flood High House	30	32	25	23
Non Flood High House	23	23	23	24

the flood affected and non-flood suburbs. In the case of the higher value suburbs, over the past 12 months, there have been 100 houses in the flood affected suburbs to 93 sales in the flood free suburbs. This contrasts significantly to the lower and middle value suburbs, where the sales in the flood free areas have been greater than sales in the flood affected suburbs (164/318 and 169/374 respectively).

Sales to listings

Figures 8 to 10 compare the number of residential house sales each month to the average weekly sale listings for that month across the suburbs in the study. These figures show that the trend in sales to listings has been significantly different across the various socio-economic areas of Brisbane.

Figure 8 shows that both the trend in monthly sales transactions has been virtually the same for flood free and flood low value suburbs over the past 12 months, despite the higher number of sales in the flood free suburbs. The actual percentage turnover in the low value suburbs has been as low as 4.2% to a maximum of 11.9% for the flood affected suburbs, with the flood free suburbs showing a minimum turnover of 3.95% and a maximum turnover of 12%.

Although the general trend in sales to listings has been similar in the middle value suburbs, the actual turnover to listings has been consistently higher in the flood affected suburbs compared to the non-flood suburbs.

Figure 9 shows that over the past 12 months the sales to listing turnover for the flood affected suburbs in the middle value suburbs has been as low as 6.8% in January 2011, but this rate increased in each successive month to a 20% in May 2011 and a year high of 23%. These sales to listings rates were nearly double the rates for flood affected properties in the low and high value suburbs.

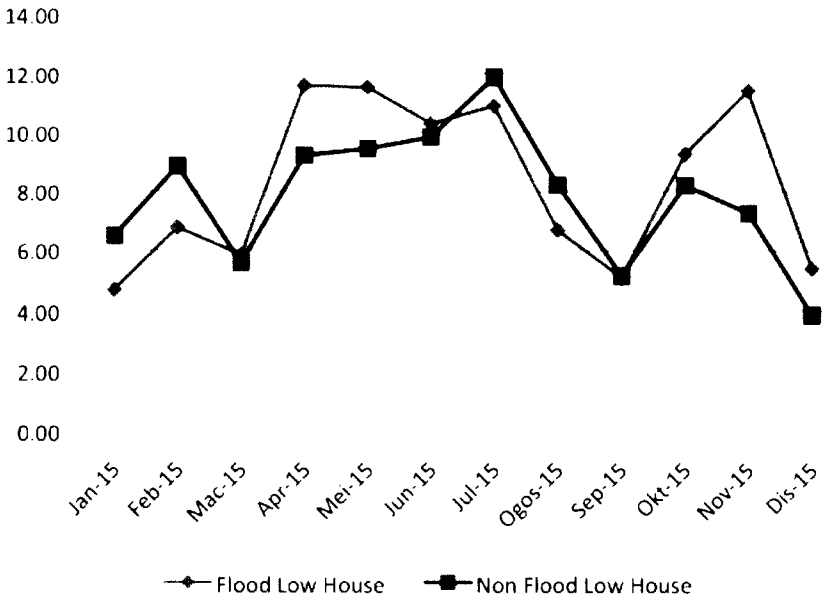

Figure 8: Monthly Sales to Average Weekly Listings: Low Value Suburbs

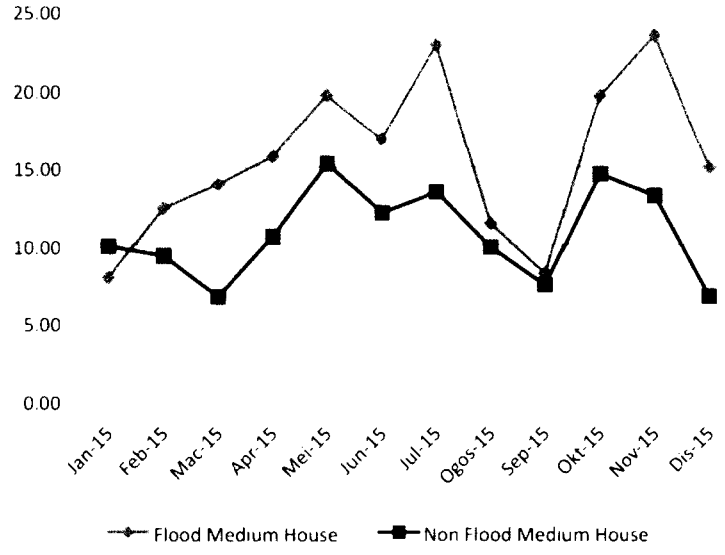

Figure 9: Monthly Sales to Average Weekly Listings: Medium Value Suburbs

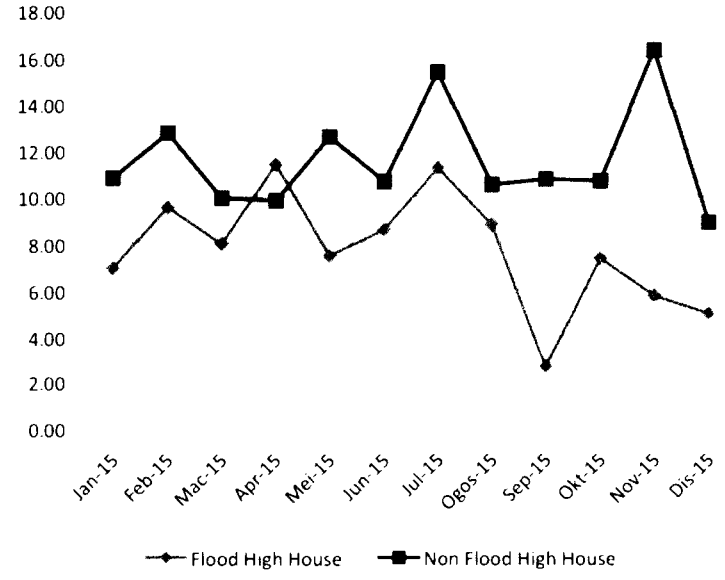

Figure 10: Monthly Sales to Average Weekly Listings: High Value Suburbs

During the same period, the percentage rate of sales to listings in the non-flood middle value suburbs was consistently lower than the flood affected suburbs, with lowest conversion percentage of 5.7% in December 2011 and a highest rate of 15% May 2011. However, these rates were still higher than the low and high value suburbs for either flood free or flood liable residential property.

Figure 10 shows that the rate of sales to sale listings in the higher value suburbs has not been similar to the other property sectors. In the case of the higher value suburbs the predominant sales activity has been in the flood affected suburbs but the conversion rate of sales to listings has been much lower in the flood affected suburbs compared to the non-flood suburbs. In September 2011 sales in the flood suburbs were only 2.6% of average weekly listings for that month and the highest conversion percentage was 11.7%. In the flood free suburbs the highest conversion percentage was 16%, with a low rate of 8.5%.

North Queensland cyclones

Cyclone Yasi was one of the most severe storms that hit Australia since the devastation of Cyclone Tracy in Darwin in 1974. The February 2011 cyclone in Northern Queensland had its greatest impact on four coastal towns being Cardwell, Innisfail, Mission Beach and Tully. The following analysis is based on the sales, sale listings and rental listings for residential property in these towns from January 2011 to January 2012. Due to the lower volume of sales in these towns, they have been grouped for this analysis and the data presented on a quarterly basis, with sales volume and median prices being compared for the 12 months prior to the cyclone and the 12 months following the cyclone.

Median Prices

Table 7 compares the median price for houses across the 4 towns in the quarters before and after the cyclone. From this table it can be seen that the median price of houses in the cyclone affected areas have fallen significantly in the 12 months following the cyclone, with an average decrease of 23.8%. On a comparison of quarterly median house prices form 2010 and 2011, it can be seen that the difference in the median price has been most significant (29.5% decrease) from Q4 2010 to Q4 2011. This decrease in median house price has been more severe than the corresponding decrease in median house prices following the Brisbane floods in the same year.

Table 7: Median House Price: Cyclone Affected Towns: 2010 to 2011 Sales Volume

	2010 Pre Cyclone	2011 Post cyclone	% Return
Q1	275000	282000	2.5
Q2	266000	229000	-13.9
Q3	258000	220000	-14.7
Q4	305000	215000	-29.5
Annual Return %	10.9	23.8	

Sales Volume

Figure 11 provides a comparison of the actual residential house sales in the cyclone affected towns in 2010 and 2011. The immediate impact of the cyclone is shown in Q1 2011, where the number of sales in 2010 was 36 for the quarter but this dropped to 9 following the cyclone. In the six months after the cyclone the sales activity in these towns increased and was actually at higher rates than the corresponding periods in 2010.

Sales Listings

The comparison of the average weekly total residential property and residential house listings for the 4 towns are shown in Figure 12. The total listings include all residential property types and the average weekly listings have fallen from 1098 properties per week in January 2011 to 1033 per week in January 2012 (a decrease of 5.9%).

During the same period the average weekly listings for residential houses in the same locations have fallen from 967 in January 2011 to 809 in January 2012, representing a decrease of 16.3%. This indicates that the unit and townhouse sectors of the market were not as severely impacted as the freestanding residential property sectors.

Rental Listings

Following the cyclone there was a very significant decrease in the number of residential properties available for lease in the four towns. The market acted in a similar way to the flood affected areas, with the most rental take up in the unit market and this take up lasting six months. Within 3 months of the cyclone, the declining trend in available rental houses was reverted and the number of residential houses available for rent increased through to January 2012. Again, the demand for rental accommodation was immediate but

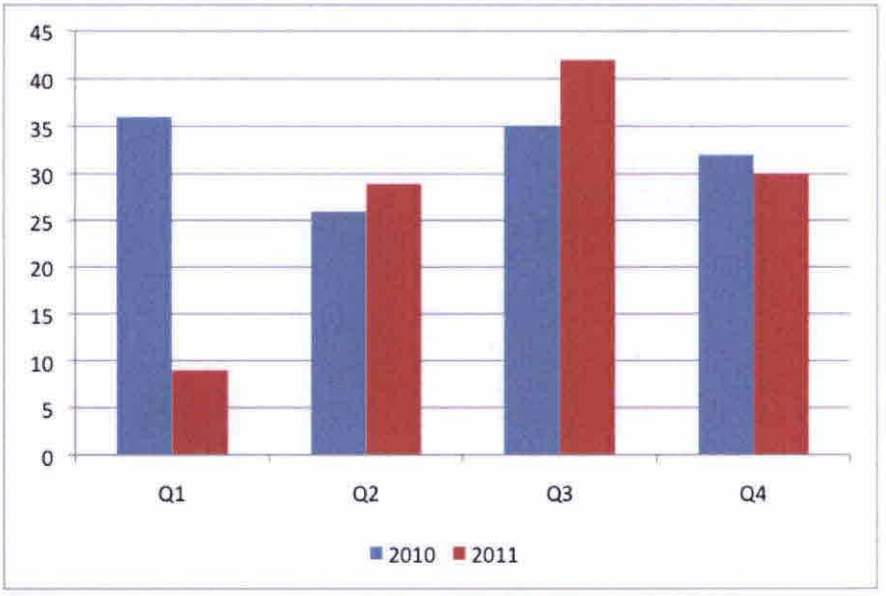

Figure 11: Comparison of House sales: North Queensland Cyclone affected Towns: 2010 and 2011

most was for a short term lease to allow for repairs on damaged houses. Once these repairs were made home owners did not renew their short term leases. In the town of Tully, there are currently no residential houses or units available for rent.

Sales to listings

The actual sales to average weekly listings per quarter are shown in Figure 14. From this figure, it can be seen that in the Q1 2011, the level of sales declined rapidly after the cyclone, with only 0.93% of houses listed for sale actually selling. During 2011 this rate of sales to listings peaked at 4.8% in the third quarter, which was also in the time period that most minor to medium level damage to houses had been repaired. However, it is also interesting to note that these rates of conversion form sales listing to actual sales are well below those levels being achieved in the flood affected suburbs of Brisbane.

Christchurch earthquakes

Christchurch has been subject to two major earthquakes in the 18 months, with the first quake in September 2010, followed by a second major earthquake in February 2011. Although the February 2011 quake was less severe from a geological basis, this quake resulted in greater loss of life and property damage than the larger quake in 2010.

Residential property damage was widespread throughout Christchurch but was discriminate in relation to individual residential properties, with houses being totally destroyed but the neighbouring properties being undamaged or only slightly damaged. This differed to the cyclone and flood events, where properties in the affected areas tended to have similar levels of damage.

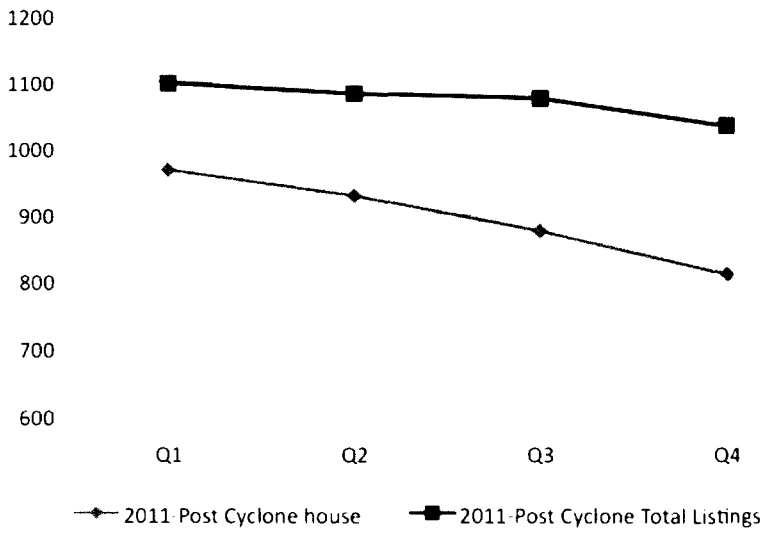

Figure 12: Comparison of House sale Listings: North Queensland Cyclone affected Towns: 2010 and 2011

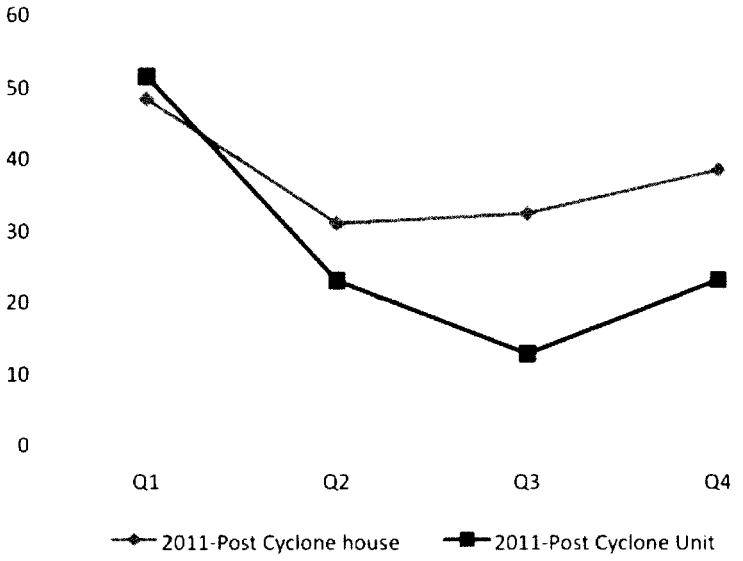

Figure 13: Comparison of House rental Listings: North Queensland Cyclone affected Towns: 2010 and 2011

Figure 14: Comparison of sales to Listings: North Queensland Cyclone affected Towns: 2011

The following analysis compares the residential house sales and rental markets before and fate the 2010 and 2011 earthquakes and provides details of the volume of sales, sale and rental listings and the time on market for residential property sales.

Figure 15 shows the monthly median residential house price for low value, medium and high value residential suburbs of Christchurch. From this figure, it can be seen that the price of residential property in the lower and middle value suburbs of Christchurch have been relatively stable over the period September 2009 to January 2012, with the median price for lower value houses increasing from $257,000 to 268,000 (4.3%) and the median price for medium value suburbs increasing from $351,000 to $375,000 (6.8%) over the same 2.3 year time period. However, this figure also shows that for these two property sectors there was a decrease in the median price of residential property from August 2010 to March 2011 (the period following the first and second earthquake) from $255,000 to $247,000 for lower value suburbs and $364,000 to $340,000 for medium value suburbs.

Although the trend and change in median residential house prices in the lower and medium value suburbs were similar, this was not the case fop the higher value suburbs. Over the period September 2009 to January 2012, the median house price in the higher value suburbs decreased from $503,000 to $478,000, with a lowest level of $430,000 in August and October 2011. Following the quake in September 2010, the median house price fell from $539,000 to $466,000, a decrease of 13.5% in 3 months. However, the decrease after the second quake was not as significant at 8.5% .

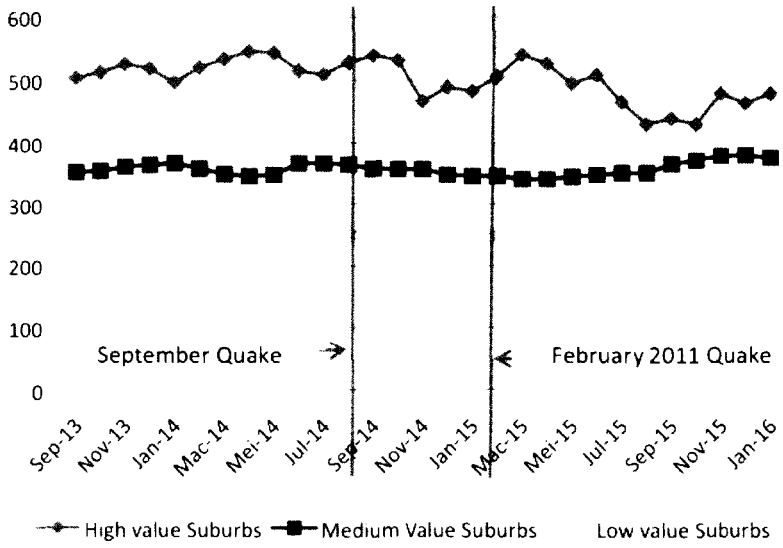

Figure 15: Christchurch Median House Prices: Socio-Economic: 2009 to 2012

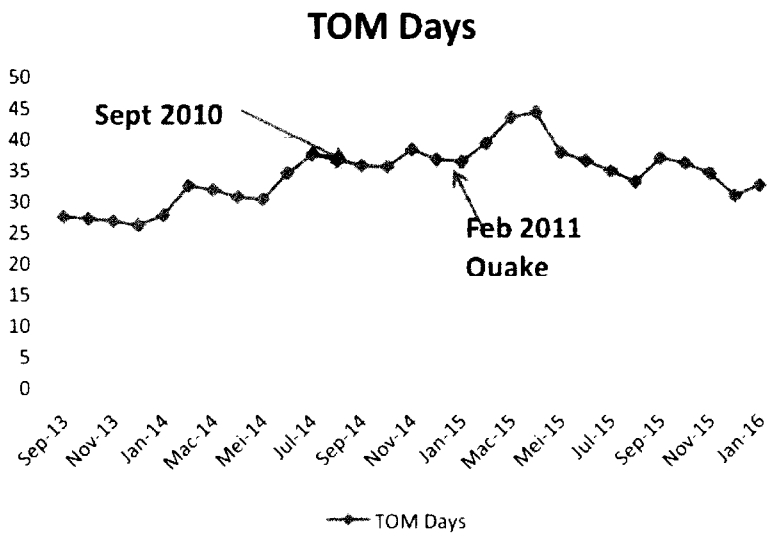

Figure 16: Christchurch residential Property sales: Time on Market: 2009-2012

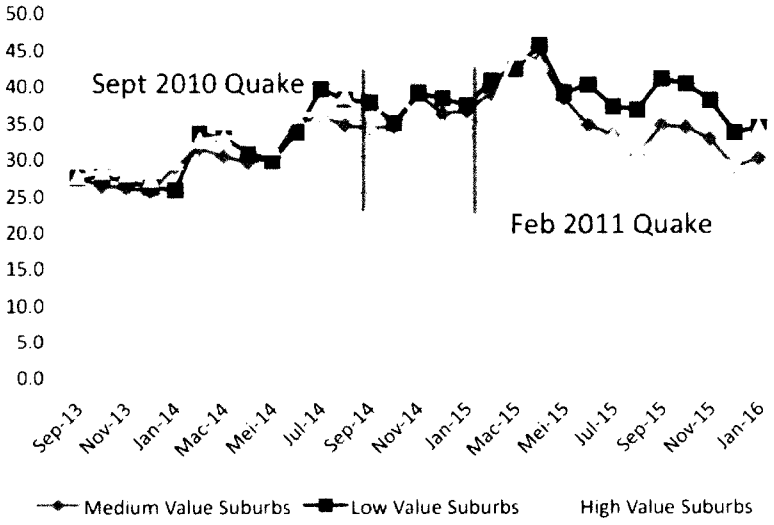

Figure 17: Christchurch Sales transactions: Socio-Economic: 2009-2012

Figure 16 shows the change in time on market for residential property in Christchurch over the period September 2009 to January 2012. This figure shows that leading up to the earthquake in September 2010, it was taking longer to sell residential property with the TOM increasing from 27 days in September 2009 to 37 days in September 2010. Following the February 2011 quake, the TOM increased to 44 days in April 2011. However, since May 2011 the TOM has fallen to a low of 31 days in December 2011.

During the 12 months prior to the September 2010 quake all Christchurch suburbs were showing an increasing and similar trend in sales transactions (refer to Figure 17). However, following the first earthquake the drop in sales transactions for the higher value suburbs was greater than the sales transactions in the middle and lower value suburbs of Christchurch. It is also interesting to note that sales transactions actually increased for all residential property sectors following the February 2012 quake and did not decline until May 2012, which followed a similar to the previous year for the same time period.

Figure 18 provides the details of the average weekly residential house sale listings from January 2009 to January 2012 based on the socio economic status of 15 Christchurch suburbs. This figure shows that the higher and middle value suburbs have had the higher average weekly listings compared to the lower value suburbs and that the reduction in sales volume from Q3 2009 to Q1 2010 was reflected in increasing sales listings for the same period. Following the September 2010 quake, weekly sales listings for the lower value suburbs fell from an average of 170 houses per week to 116 in Q2 2011(31.7% decrease). During the same period listings in the middle value and high value suburbs decreased by 25.4% and 14.9% respectively.

Conclusions

The common factor in relation to each of these individual natural disasters has been the reaction of the market participants immediately following the event. In all cases the first 3 to 6 months after the event saw am immediate drop in residential house prices but the drop was not consistent. In

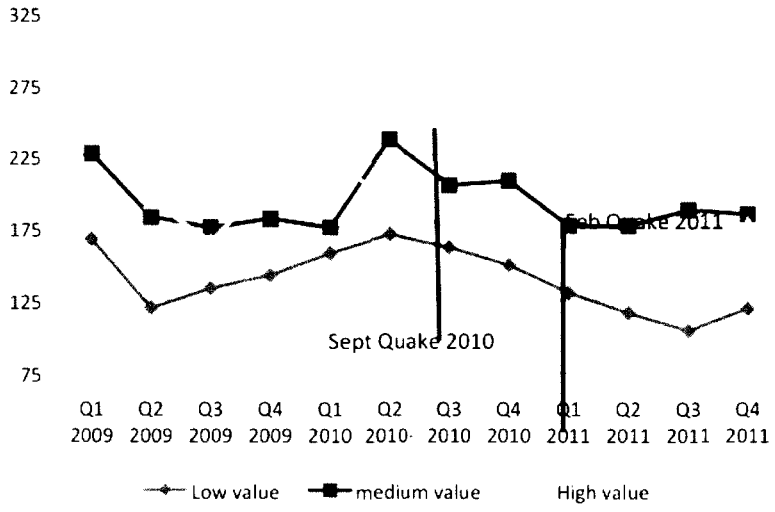

Figure 18: Christchurch Sales to Listings: Socio-Economic: 2009-2012

the Brisbane floods, the lower and high value suburbs saw significantly greater price falls compared to the middle value suburbs. In the case of the Christchurch earthquakes, the decrease in the median price for houses in the lower and middle value suburbs was lower than the decrease in price for the higher value suburbs. This indicates that a natural disaster will have the greatest impact on high and low residential property sectors.

House sales listings do not decline immediately after a natural disaster but the affected areas can maintain or increase sale listings as house owners take the opportunity to leave the affected areas. In such cases there is a corresponding decrease in the sales listings for nearby non affected suburbs.

In cases where the damage from the natural disaster is widespread, the impact on sale listings is consistent and results in an overall decline in listings until such time as major repairs are undertaken.

Following a significant natural disaster, there is an immediate impact on the rental property market in the subject area. Rental property listings decrease immediately after the event as people seek alternate accommodation. The drop is more prominent in the higher value suburbs as these people generally have greater access to funds to rent, whereas the alternatives are not as great for house owners/renters in the lower value areas. The take up of rental units is greater than houses as the rental period is only for a short period not long term. After 6 months there is an increase in available rental property as those who rented while their own properties were repaired, move back in.

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By Maggie Tait of NZPA | Tuesday, March 1, 2011 9:40
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