REAL ESTATE VALUATION AND VALUING SUSTAINABILITY: A CASE STUDY OF AUSTRALIA

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ABSTRACT

Interest in and implementation of sustainability in the real estate market reached its heights prior to the Global Financial Crisis in Australia. Post-2008, sustainability has been on the backburner as funds and REITS struggle to maintain financial viability and control of their debt. This has seen a rationalization of sustainability within the commercial real estate sector, but has also allowed other stakeholders in the market to catch up and ascertain the different opportunities sustainability provides in terms of value in the real estate market.

This paper examines the development of sustainability in the Australian commercial real estate market from the valuers' perspective. The value of sustainability in commercial real estate is still relatively uncertain, primarily because valuers are uncertain of the influence and impact sustainability has on real estate market values. However, market maturation and development will assist valuers' understanding and development of heuristics, which will in time allow for reflection of sustainability in valuation practice.

The paper is part of a larger research project that is tracking valuers' development of knowledge over time in order to ascertain the levels of consideration in heuristic-based valuation practice. This paper reports on valuers' perceptions of the market changes in sustainability adoption and value in the Australian real estate market from 2007 to 2011.

Keywords: sustainability, real estate, valuation

INTRODUCTION

The uptake of sustainability in the built environment is tangibly linked to the financial benefits that can be achieved. However, being able to clarify and identify exactly the financial influence of sustainability is inherently difficult, but underpins asset development and management decisions. As is, sustainability characteristics in real estate are perceived to be enhancing and complementing an asset's market value (Lutzkendorf and Lorenz 2011). At present, this is not being reflected in real estate valuations for a variety of reasons including the difficulties in sustainability assessment, analysing out the impact of sustainability, comparative analysis, applicable evidence for comparison and limited knowledge about sustainability.

This paper investigates changes in sustainability assessment in the valuation context over time and whether valuers have the skills and experience to adequately incorporate and consider the implications sustainability may have on market value. This paper compares valuers' perceptions, knowledge, understanding and application of sustainability in the valuation process over two time periods, being 2007 and 2011. The results identified a major concern being the knowledge valuers believe they have of sustainability and what they actually know about sustainability. This leads to

further apprehensions relating to the accuracy and reliability of reporting of values that consider sustainability in commercial property.

Valuers have a pivotal role in ascertaining and reporting market values and in an investment advisory capacity to investors, occupiers and other market stakeholders (Baum, Crosby and MacGregor 1996; Levy and Schuck 2005; Lorenz et al 2008). More particularly, when considering and making decisions relating to the implementation of sustainable development principles, stakeholders are required to provide financial justification. The type of assets in commercial real estate now are often held by real estate investment trusts (REITS) and reporting is based on market values. Consequently, when considering sustainability initiatives, demonstrating how they will affect and increase the market value of an asset is required and justification for a particular initiative to be undertaken is usually based on its economic success (Pivo and Fisher 2010; Rohde and Lutzkendorf 2009; Warren-Myers 2010). This may be undertaken in-house, however, at the end of the day when a valuer values the property, it is the valuer who will determine whether those sustainability initiatives have had any affect on the market value. To date, sustainability has received limited attention in valuation practice and, as a result, the relationship between sustainability and market value has not been clearly defined, making the investment community hesitant about the necessity to invest in sustainability.

Sustainability is not a new phenomenon and its previous 'fad-like' status is now beginning to fade as sustainability objectives and management become part of 'business as usual', albeit to varying degrees. There is considerable confusion and differing opinions as to what exactly is the definition of sustainability and this is continually redefined. Nevertheless, sustainability can be generally understood to underpin the concepts gained from the Brundtland Report (1987), Pearce et al (1989) and WBCSD (2006). Further, the triple bottom line, identifying the balance between environmental, social and economic priorities in a sustained manner for future generations in the context of the built environment, has been examined by Pivo and McNamara (2005), WWF and Insight (2005), EUROSIF (2006, 2007) and Strong and Hemphill (2006). To further determine and assess sustainability, rating or assessment tools were developed and in 2008 there were more than 600 such tools (Dixon et al 2008). When examined from a building context, these focused primarily on environmental aspects, followed by social characteristics but with limited economic consideration. Consequently, the rating tools utilized in the Australian market focus on the environmental and social components with little regard to the economic consideration, for example Green Star and NABERS (see Table 1).

Although Green Star and NABERS are the current key metrics, along with the Mandatory Disclosure Scheme for commercial property, used by the property industry to assess sustainability, this does not necessarily mean that sustainability is being encapsulated accurately or even adequately. Sustainability is important in the property industry, yet it is only one of many characteristics and variables valuers need to consider in the valuation process.

Valuers displayed little interest in sustainability assessment or consideration in valuations at the inception of this project in 2006 and on investigation of valuer actions in 2007, which was supported by observations of valuer actions also made by Lutzkendorf and Lorenz (2005). As time has progressed and even though a Global Financial Crisis has occurred, sustainability in the built

environment is becoming more mainstream, particularly in Australia where mandatory reporting schemes have recently been introduced. There has also been a change in attitude across the market regarding sustainability and the need for its inclusion in valuation reports, as directed, for example, by REITS and other major institutional grade property owners (personal communication Bowman, 5/2/2013). There is increasing research indicating a relationship between sustainability and market value (see Warren-Myers 2012 for a detailed background of the literature pertaining to the relationship between sustainability and value).

Originally, research focused on theoretical and methodological relationships (see detailed discussion in Warren-Myers 2012), but, in recent years, there have been a number of empirical studies indicating a relationship (see Reichardt et al 2012; Newell et al 2011; Eichholtz et al 2009, 2010; Pivo and Fisher 2009, 2010; Fuerst and McAllister 2008, 2010, 2011; Sayce et al 2010). However, the applicability of this type of research in valuation practice is limited due to the nature of the profession. There have been several publications by the RICS (2009, 2011) and other research studies that have provided direction to valuers as to sustainability consideration for valuation (for example, CBRE 2011; Bowman and Wills 2008; Muldavin 2009, Lorenz and Lutzkendorf 2008, 2011). Valuers indicate reporting on sustainability in valuation reports is taking place (Warren-Myers 2013), however the type and extent of adjustment, if any, to the financial components within the valuation process are still relatively unknown or ignored.

Valuation practice incorporates both science and art in the use of algorithmic models to reflect investment modelling of market value and the employment of heuristics in the manner of comparative analysis, assumptions and assessment of market value. (Heuristics are cognitive short cuts used by practitioners, which allow for a reduction in the amount of information processed (Hardin III 1997, 1999). Valuation is reliant on experience-based heuristics, which are rules of thumb modified implicitly in relation to the situation of the heterogeneic nature of property and the property market (Seabrook and How 2004)).Heuristics are founded on a valuers' intuitive knowledge of valuation practice and the dynamics of the commercial property market. The reliance in the valuation process on heuristics used in practice raises questions as to whether valuers are adequately equipped in terms of strategic and intuitive knowledge to ascertain the relationship between sustainability and market value.

There needs to be a greater understanding of valuers' assessment, comparison and acknowledgement of sustainability in the valuation process. Furthermore, valuers' development of knowledge and their knowledge of sustainability and its relationship with various characteristics and variables and of the changing market overtime and its application in practice needs to be investigated.

This paper reports on a time series survey conducted in 2007 and 2011 of Australian valuers. It examines their perspectives on sustainability in the market and how they may have changed over time, how sustainability is assessed in practice and whether valuers have the level of knowledge required to undertake valuations and adequately consider sustainability in the assessment of market value.
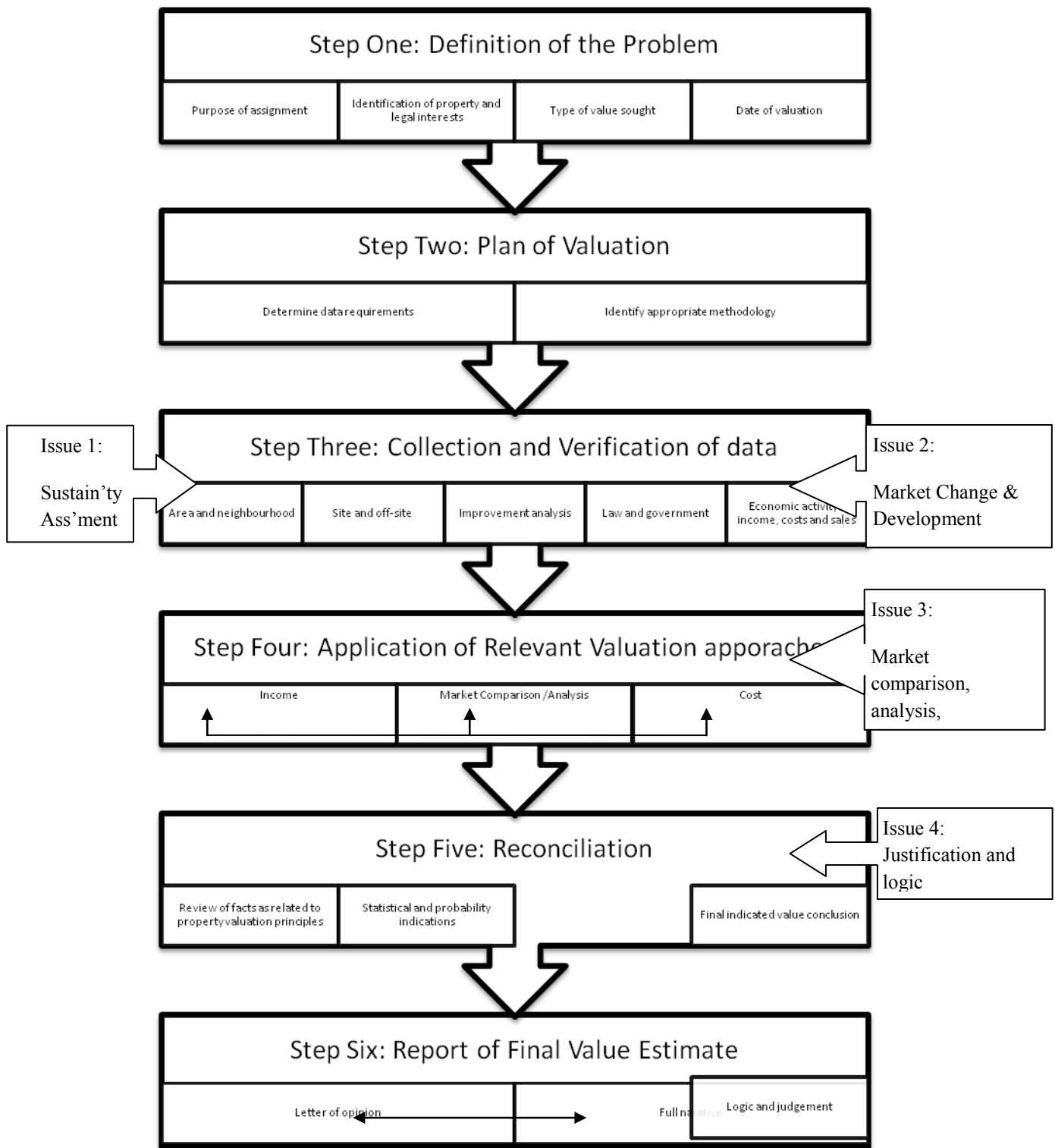
PROBLEM CONTEXT

The problem context is that as a 'factor' or 'characteristic' within a market develops and is acknowledged within the market and there is increased uptake, the value perceived becomes explained by transactions. Analysis of the transactions for one particular element in real estate is inherently difficult, however, comparative analysis, adjustment and heuristics are well-known factors in this process in traditional valuation practice (Hardin III, 1999). Sustainability is just another characteristic or factor of the building that requires consideration, comparative analysis and, once understood, the adjustments and heuristics applied. To reach this point, the market must reach some level of maturity for valuers to develop their strategic knowledge into intuitive knowledge and thus create heuristics on which they can then rely in practice (Warren-Myers 2010).

Today, there are significant levels of research, both academic and industry-based, to suggest a relationship between sustainability, value, price and other transactions. From a valuation practice perspective, this means little until the process of comparative analysis and adjustment is undertaken. Consequently, within the micro-market, a valuer needs to find comparable transactions and analyse the characteristics and make adjustments based on their intuitive knowledge of the market and heuristics. However, when sustainability is a factor, there first needs to be evidence for comparison. Secondly, what metrics are valuers using to compare and how knowledgeable about these metrics must valuers be to accurately and justifiably make adjustments? Following Figure 1, there are four key issues when considering this problem in valuation practice that need to be addressed:

1. Sustainability assessment – *what methods are being used to compare sustainability? Have they changed?*
2. Market change and development – *do market actors behave differently? Have perspectives changed over time towards sustainability?*
3. Market comparison, analysis and adjustment – *are comparisons being made, if so, how is comparison and analysis undertaken? Is this well informed and are the adjustments appropriate?*
4. Justification and logic – *when finalizing and rationalizing the end result of an assessed value, are the valuers adequately skilled, knowledgeable and qualified to be able to justify the results from a sustainability perspective?*

The first issue in the process is assessing and comparing a building from a sustainability perspective. This will have been essentially completed for the valuer by other third-party systems which they can rely on as a measurement tool, if they are able to understand the effective operational aspects of the tool, the justification for and the rationale of how the systems work.

In Australia rating tools have now been around for over a decade and the profile of 'sustainable' buildings within commercial office space has increased significantly, especially in light of the recent (2010) mandatory disclosure requirement for energy efficiency for buildings over 2,000sqm, now known as a Building Energy Efficiency Certificate (BEEC). Table 1 provides a brief overview of the current rating systems in Australia. Therefore, it needs to be ascertained what valuers are using to assess and compare comparable evidence for use in a valuation. (For further information and discussion of rating tools please see Warren-Myers (2012a)).

Step One: Definition of the Problem

| Purpose of assignment | Identification of property and legal interests | Type of value sought | Date of valuation |

Step Two: Plan of Valuation

| Determine data requirements | Identify appropriate methodology |

Step Three: Collection and Verification of data

Issue 1:

Sustain'ty Ass'ment

| Area and neighbourhood | Site and off-site | Improvement analysis | Law and government | Economic activity, income, costs and sales |

Issue 2:

Market Change & Development

Step Four: Application of Relevant Valuation apporaches

Issue 3:

Market comparison, analysis,

| Income | Market Comparison /Analysis | Cost |

Step Five: Reconciliation

Issue 4: Justification and logic

| Review of facts as related to property valuation principles | Statistical and probability indications | Final indicated value conclusion |

Step Six: Report of Final Value Estimate

| Letter of opinion | Full narrative | Logic and judgement |

Identification of the Gap in Knowledge
Source: After Warren-Myers (2010) Figure 1.1 and Friedman and Ordway (1981) Figure 2.3.
Figure 1

Name	Assessment	Star Rating	Rating frequency	Administrator	Date Introduced
NABERS National Australian Built Environment Rating System (office and building types)	Operational, measurable building data, energy, water, waste, IEQ. (NABERS referred to here focuses on Energy)	0 - 6 stars (½ stars)	Annual Voluntary (unless required for BEEC)	DECC (DEUS) NSW Government	1998 (Previously known as the ABGR energy)
Green Star (office and other building types)	Design, holistic, targets 8 environmental categories	4 – 6 stars (no ½ stars)	Once off Voluntary	Australian Green Building Council	2002
BEEC Building Energy Efficiency Certificate (offices)	Uses NABERS energy + lighting assessment and general energy efficiency guidance	0 - 6 stars (½ stars)	Annual (Mandatory for all buildings over 2,000 sqm)	Federal Government	2010

Australian Sustainability Assessment Tools
Sources: Green Building Council of Australia (2012); NSW Government (2012); Australian Government (2012); Commonwealth of Australia (2012).
Table 1

The second, third and fourth issues are inter-related and focused on valuers' awareness of market change, the changing perceptions of actors within the market they are reflecting in the process of assessing market value and whether the adjustments, assumptions and heuristics they use in the process are thoroughly justified. Consequently, they need to understand comparative measures of sustainability, be able to compare and make adjustments as a result and be able to reflect the market's sentiments towards these metrics in the 'hypothetical willing buyer – willing seller' process of the assessment of market value. These need to be rationalized and justified throughout the valuation process and the question is at which point are valuers currently in terms of their ability to understand, assess, compare and make adjustments in the valuation process when addressing sustainability?

Warren-Myers (2010) suggested sustainability was not a 'new' type of building, it was more a technological improvement similar to other changes in history in the built environment, like air conditioning and lifts. Consequently, Warren-Myers proposed that sustainability in commercial real

estate was like any other product and would likely follow the product development model in terms of market growth and maturity. It would, accordingly, be linked to valuers' understanding, comprehension and development of strategic and intuitive knowledge of the relationship between sustainability and market value over time. As a result, valuers would, in time, develop the level of knowledge and heuristics to be able to accurately assess, compare, adjust and report on the impact that sustainability has on market value.

In Figure 2, the model, based on the product evolution model by McColl-Kennedy et al (1992) and adapted in Warren-Myers (2010), proposes a relationship between the level of market maturity through increasing transactions and number of buildings within the market and the uptake and changes in perception of actors within the market as their knowledge develops in regard to sustainability. There is a lag in valuers developing a strategic level of knowledge and a need for the market to approach a level of maturity before valuers are able to adequately assess and compare market evidence and to then begin the process of building intuitive knowledge which would inherently be reflected in valuation practice.

In order to see broad-scale investment in sustainability, the impact that sustainability has on market value needs to be identified. Before that point is reached, it needs to be ascertained whether the market has reached a level where valuers have developed strategic and intuitive knowledge to inform their practice and use of heuristics and, if so, what is their understanding, what is their knowledge and how is it being reflected in their assessments of market value?

Market Maturity and Valuer Development of Knowledge and Heuristics

Source: Warren-Myers (2010) Figure 5.3

Figure 2

METHOD AND RESEARCH QUESTIONS

This paper is part of a larger longitudinal research project investigating the role of knowledge development in valuation practice and the developing and changing characteristics of the real estate market in regard to sustainability and its complex relationship with finance and asset strategy and, consequently, the changes in the understanding and perception of value associated with sustainability. An integral part of this relationship is the role of the valuer and their interpretation of market change and its implications for the market value of a particular asset. When considering and investigating the relationship between sustainability and market value, one must investigate how, what and why valuers are assessing and reporting sustainability and its relationship with value. Consequently, this paper is reporting on results of a comparison of valuer perceptions and understanding in 2007 and in 2011 in Australia.

The study is using an online survey conducted in 2007 and again in 2011 of Australian valuers working in the commercial real estate market. In 2007, eighty-seven (87) responses were received and, in 2011, eighty (80) valuers responded. The overall sample size is difficult to ascertain. There are approximately 3,500 practising valuers in Australia, with an indicative percentage of valuers focused on commercial property of 12.5%. Therefore the response rate for the survey of the population was 20% in 2007 and 18% in 2011. The respondents were recruited through the distribution of online survey links through the professional bodies' newsletters, namely RICS (Royal Institution of Chartered Surveyors) and API (Australian Property Institute), and at some industry functions. The survey consisted of both open and closed-response questions which investigated valuers' knowledge and ability to perform sustainability assessments, perceptions of sustainability and value and levels of reporting and integration of sustainability into the valuation process.

As with any survey approach there are limitations. The key limitations of this research are, first, the recruiting of the sample population and, secondly, the level of bias in the sample population. No incentives were offered to valuers to complete the survey, consequently participation likely was from a personal interest in the survey topic or from working specifically in that field. Thus, it is anticipated that in both the 2007 and 2011 surveys there may be some bias in the findings, as the valuers who responded may be more informed or engaged in the context of sustainability in valuation.

This paper will compare certain results from 2007 with results from the 2011 survey. The primary question of the research to be addressed is:

- has sustainability in the market developed to a point where valuers are able to ascertain the value of sustainability in commercial real estate?

To address the primary research question, the following sub-questions are investigated:

- do valuers perceive a value associated with sustainability in commercial real estate?
- how are valuers assessing sustainability when considering the valuation process?

Data from 2011 only will address the following question, which is imperative to understanding valuers' present knowledge levels:

- what level of knowledge do valuers have of sustainability and are they adequately addressing sustainability in valuation practice?

This paper examines the development of sustainability in the Australian commercial real estate market from a valuer's perspective. It will address the current state of the market through the eyes of the valuation profession and identify whether sustainability is an increasing sector of the market or a decreasing factor due to recent financial woes and difficulties. Part of this discussion, and an important component in market growth or decline, is whether the concept of value is associated with sustainability in the real estate market. This paper investigates the Australian real estate market and whether sustainability implementation is a growing or declining sector of the market and what shape it is taking.

RESULTS AND DISCUSSION

The results section is laid out to, first, examine the sub-questions and then the primary question.

Profile of Sample

The level of experience or time spent working in valuations has a strong implication for the level of strategic and intuitive knowledge developed and, consequently, reliance on heuristics in assessing market values. Therefore, the profiles of valuers from both the 2007 and 2011 surveys are shown in Figure 3. The 2007 survey had a higher proportion of valuers with up to 10 years' experience, however, the later survey in 2011 had a more even spread across the year groups, with 51% having more than 10 years' experience. Overall, the percentage of valuers with more than 5 years' experience as a valuer was 71%. These results imply that the sample should demonstrate higher levels of experience and understanding of market dynamics and changes.
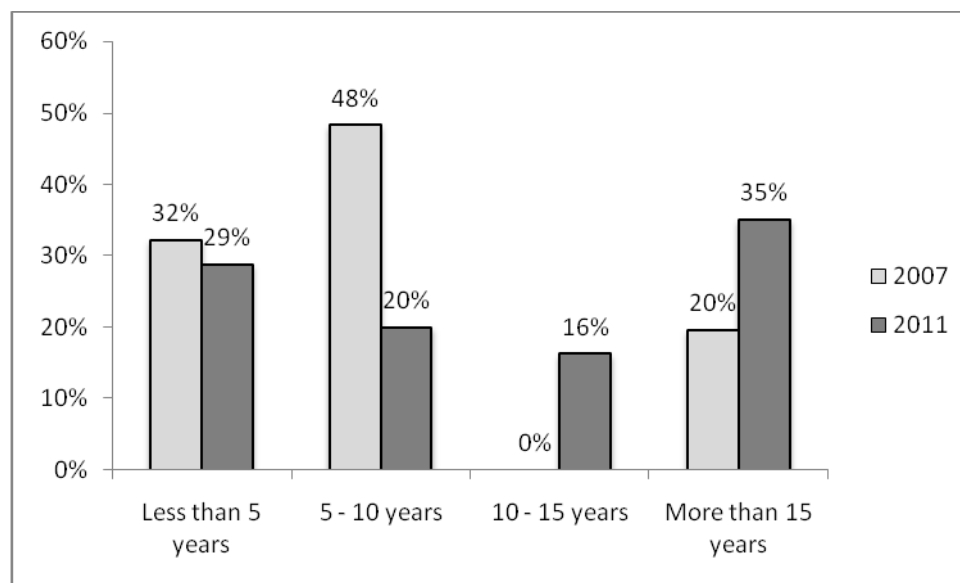
**Valuers' Levels of Experience in 2007 and 2011**
Source: Author
Figure 3

Valuers' Perceptions of Sustainability in the Commercial Real Estate Markets and Its Value

Valuers were asked in both the 2007 and 2011 surveys to rank on a 7-point Likert scale their perception of:

- the level of importance sustainability had in the real estate market;
- the level of investment in sustainability; and
- the level of implementation of sustainability in the real estate market.

In Figure 4, the responses from the 2007 survey indicate that valuers perceived sustainability to be of significant importance in the real estate market, that there was considerable investment and that there was a higher level of implementation compared to the responses from 2011. Considering the prominent focus of sustainability and investment in the 2000's leading up to 2008, linked with escalating real estate values and the need to differentiate one's asset, in Australia there was inherently a strong focus in the real estate sector on sustainability. Post-GFC it is apparent that valuers perceive a more moderate attitude towards sustainability, in terms of importance, investment and implementation.
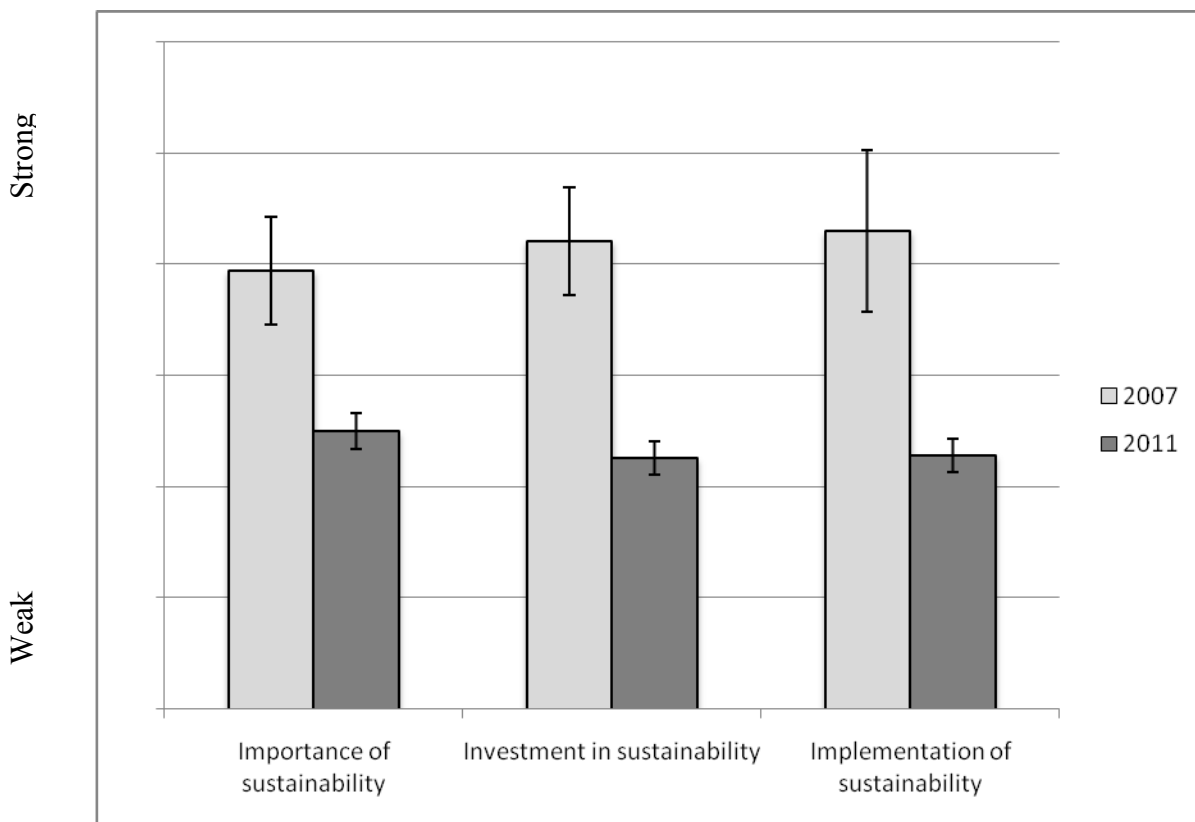
Valuers' Perception of the Real Estate Market's Approach to Sustainability
Source: Author
Figure 4

Valuers in both the 2007 and 2011 surveys were asked about their perception of market actors' willingness to pay for sustainability. This was asked separately, with Figure 5 displaying the responses for both occupiers and owners within the same chart. From 2007 to 2011 valuers do not perceive any difference in occupiers' willingness to pay for sustainability in their occupation of real estate, whereas, they perceive that, since 2007, owners are now more willing to pay for sustainability, a jump of 24%. This appears to be contrary to their opinions of the real estate market's approach to sustainability in 2011 in Figure 4. Further data from Jones Lang LaSalle and their occupier sentiment survey also seem to suggest that significant changes have occurred in
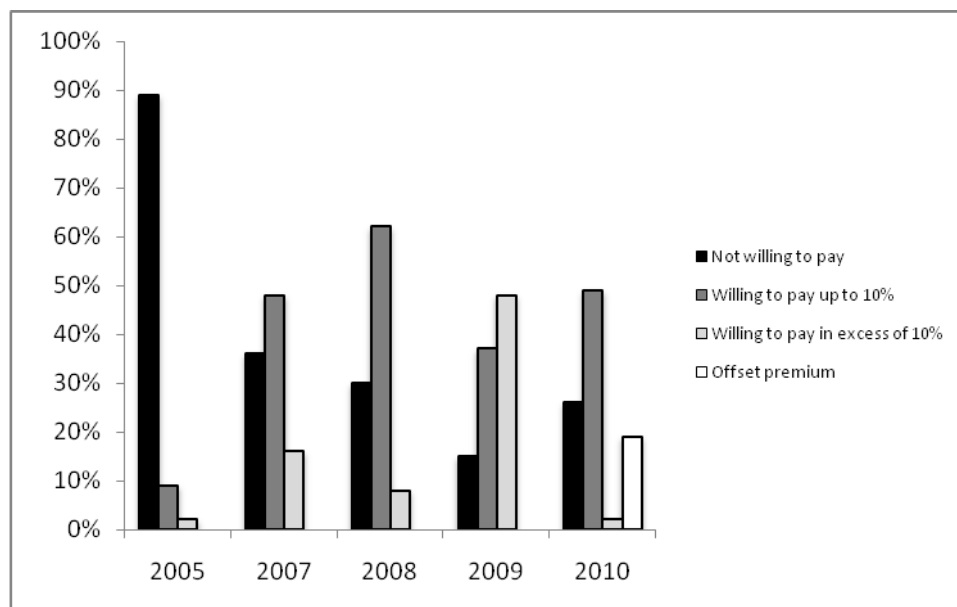
occupier sentiment towards sustainability occupation, as shown in Figure 6. Although changes have occurred in profiles, overall levels are not significantly different between 2007 and 2011, with the exception of an added option in the 2011 survey of 'offset' premium.
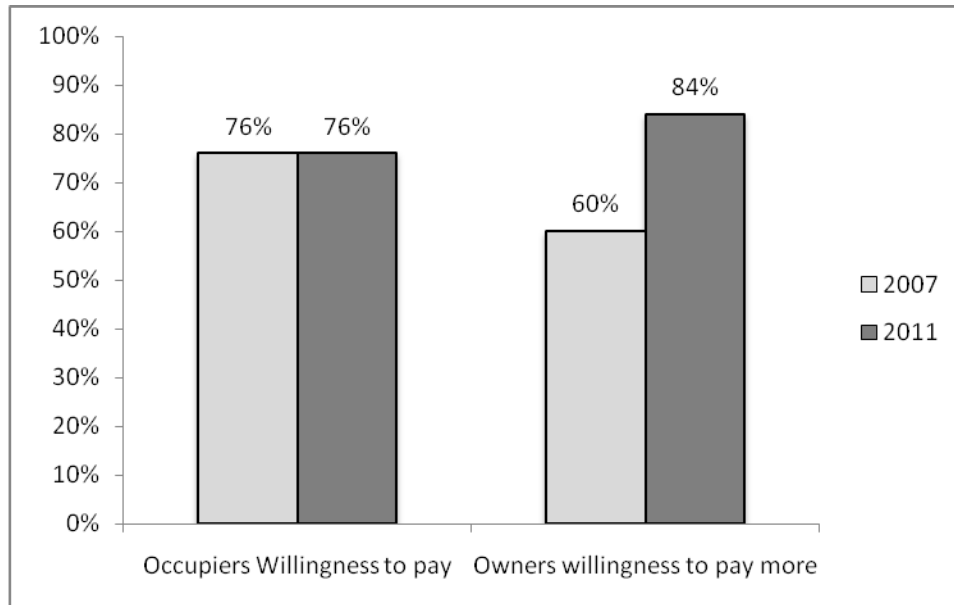
Valuers' Perception of Owners' and Investors' Willingness to Pay
Source: Author
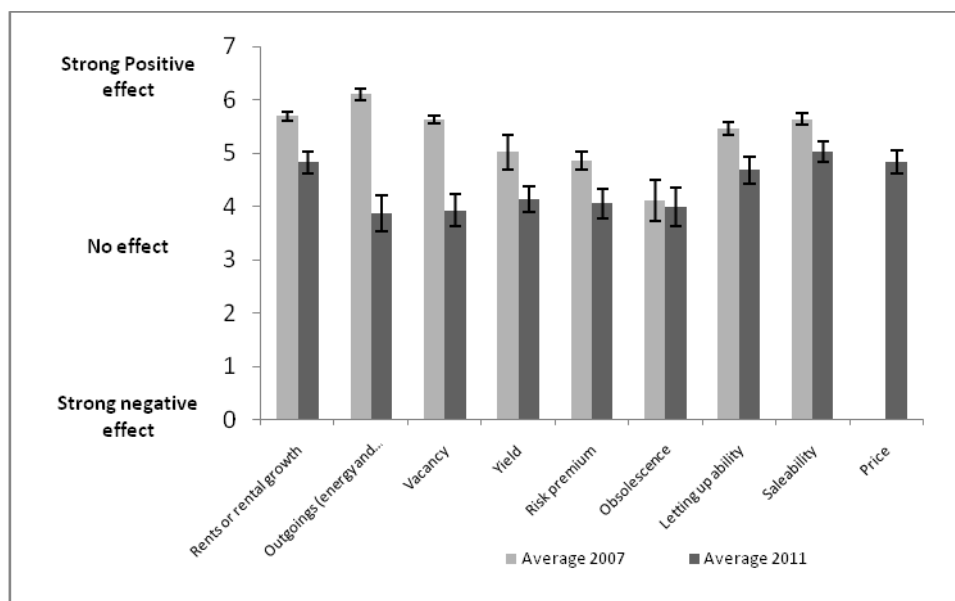**Figure 5**

Jones Lang LaSalle 2005-2010 Occupier Sentiment Survey
Source: CoreNet and Jones Lang LaSalle 2010
'Global Corporate Occupier Survey Findings' Figure 1 (2011)
Figure 6

When considering market value there are numerous elements that contribute to the assessment of market value. This is also true for 'sustainability', it is made up of multiple aspects, initiatives, characteristics and elements. Consequently, to understand potentially where sustainability may have a relationship with market value, investigation into some of the variables is required. A 7-point Likert scale was used to ascertain valuers' perceptions of different variables and the strength of the effect. First, in Figure 7, valuation variables are examined to determine how sustainability may affect them. This, again, had data from 2007 which was compared with 2011 and a significant difference was identified between the years. In 2007, a stronger positive outlook as to the effect sustainability had on particular valuation variables was identified, compared to 2011. A moderation of opinion across the eight variables was noted, with major changes occurring in outgoings and vacancy and, to a lesser extent, rents, yield and risk premium. Albeit, the results indicate valuers believe sustainability has a positive effect, however, there has been considerable change in perception between 2007 and 2011.
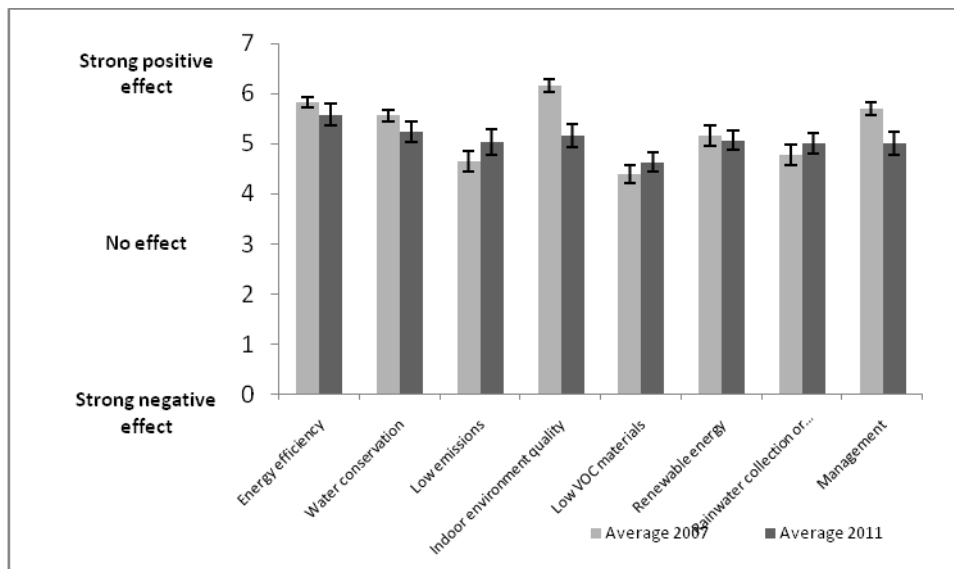

Valuation Variables Affected by Sustainability
Source: Author
Figure 7

When examined in the opposite light, that is, which particular sustainability characteristics affect value, using the same 7-point Likert scale, it is noted that the change in opinions between 2007 and 2011 in Figure 8 is not as great as shown in Figure 7. The greatest difference is in Indoor Environment Quality, which has decreased significantly from 6.2 to 5 on the Likert scale and, to a lesser extent, Management from 5.7 to 5. An interesting point to note, although not significant, is the rise in the effect of emissions, indicating that the profile of emissions in the market may have changed. This is not surprising considering Australia, at the time of this survey, was proposing to bring in a carbon price which was later introduced in July 2012. Overall, most of the sustainability characteristics listed here valuers believed had a positive effect on market value. However, how valuers would then assess, compare and make adjustment in relation to sustainability was not investigated in this survey and certainly is an area for further investigation.

Sustainability Variables That Affect Value
Source: Author
Figure 8

Sustainability Assessment

For valuers, being able to compare two buildings is an integral part of the valuation process. When assessing rents, yields, capitalization rates or values, comparisons need to be made between the transactions and the characteristics of the buildings as well as other factors being considered. For sustainability to be assessed and compared, valuers are not expert sustainability consultants, so being able to undertake a lengthy comparison of the sustainability attributes of a property is probably not feasible. In order to ascertain what valuers are using as their sustainability 'metric' for comparison, a question was asked about which approach they would take to assessing the sustainability characteristics of a building. Figure 9 demonstrates that there has been little change in the overall profile of how valuers approach sustainability assessments from 2007 to 2011, with the exception of the NABERS performance which has risen from 13% in 2007 to 24% in 2011. This is not an unsurprising trend given that mandatory disclosure of energy efficiency requires a NABERS performance rating to be divulged.

The other interesting aspect is that Green Star still holds a significant weighting for sustainability assessment. This is of concern considering that the majority of the building stock is unable to achieve this rating and it is primarily focused on new builds and, as such, there are not a significant number of them in any one location. In addition, concerns have been raised about the nature of comparability with this tool (see Warren-Myers 2012), as there can be two buildings in a similar location, both with 5-Star Green Star ratings, however, they may inherently be significantly different in the way the rating was achieved. For example, one building may be highly energy efficient with a tri-gen plant, whilst the other building might have a very high score for indoor environment quality, emissions and water recycling and collection. Thus, the two buildings are significantly different and the type of tenant who would wish to occupy the premises would likely exhibit different behaviour in terms of rent, lease terms and the like.
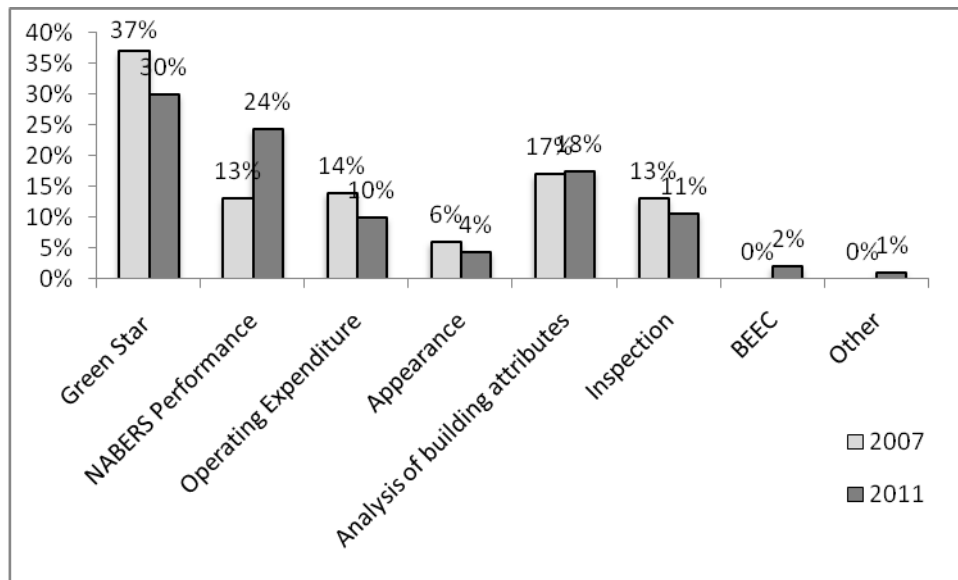
Valuers' Preference for Sustainability Assessment
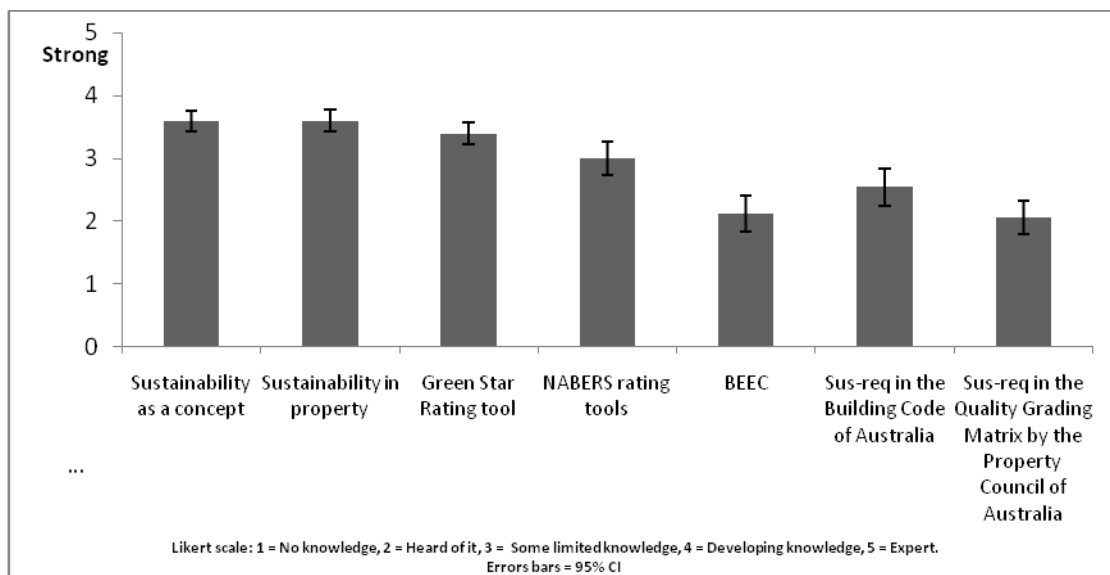**Source:Author**
Figure 9

Considering the issues raised above and the reliance and focus on the Green Star system as the sustainability assessment tool, the 2011 survey investigated the level of knowledge valuers had about the industry rating tools. First, it asked valuers to rank their own knowledge of a range of sustainability rating systems, as shown in Figure 10 and Figure 11. This was then followed by actually testing their knowledge by asking several basic questions. The results are displayed in Figure 12. In Figure 10, valuers were generally confident that they had developing knowledge or expert knowledge of sustainability as a concept. Figure 11 indicates an average across the sample of 3.6 out of 5. The profile in Figure 11 of valuers' knowledge of the two main industry rating tools indicated they were slightly less confident, with an average of 3.4 for Green Star, and 3 for NABERS.

However, close to 50% of valuers believed they were expert or developing a high level of knowledge around Green Star and NABERS, with a further 49% indicating they had some limited knowledge of Green Star and 32% of NABERS. When it came to the mandatory energy disclosure program, BEEC, there were 49% who had no idea what this was and only a small proportion of valuers had some understanding or knowledge of it. This was also reflected in the overall average of 2.1, indicating the bulk of the sample had heard of it. In regard to sustainability requirements in the Building Code of Australia, there was a fairly even distribution between 24%–25% over the categories (excluding expert). Whilst the sustainability classifications/requirements in the Quality Grading Matrix are used by valuers continuously in practice, there was limited knowledge they existed although the requirements have been in the quality matrix since 2007.

Overall, it would appear valuers believe they have a developing knowledge (level 4 on a 5-point Likert scale) in regard to sustainability as a concept in property and the two main industry rating tools, Green Star and NABERS, all with an average of 3 and above across the sample.
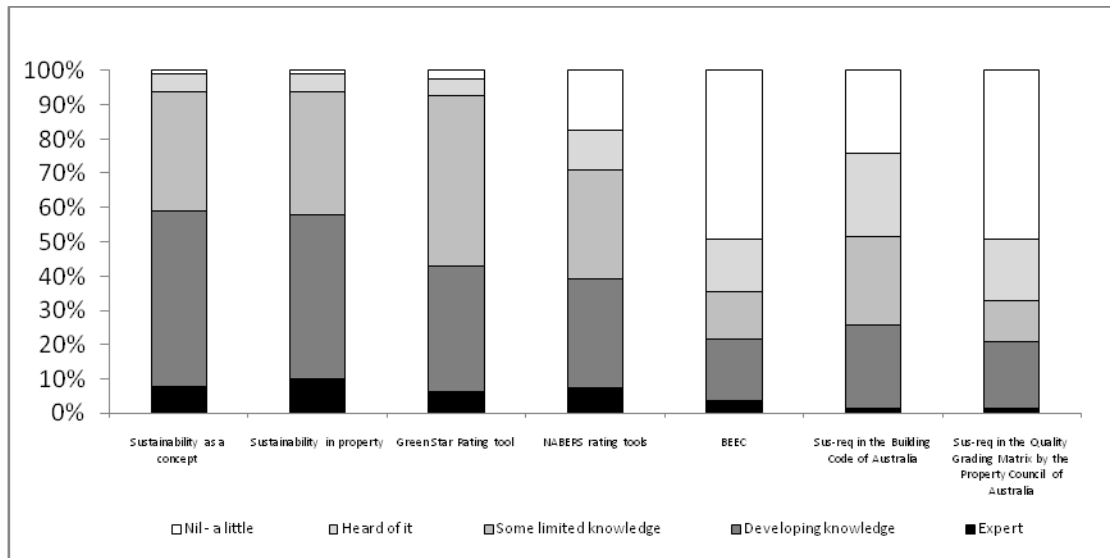
**Distribution of Responses to Valuers' Perception of
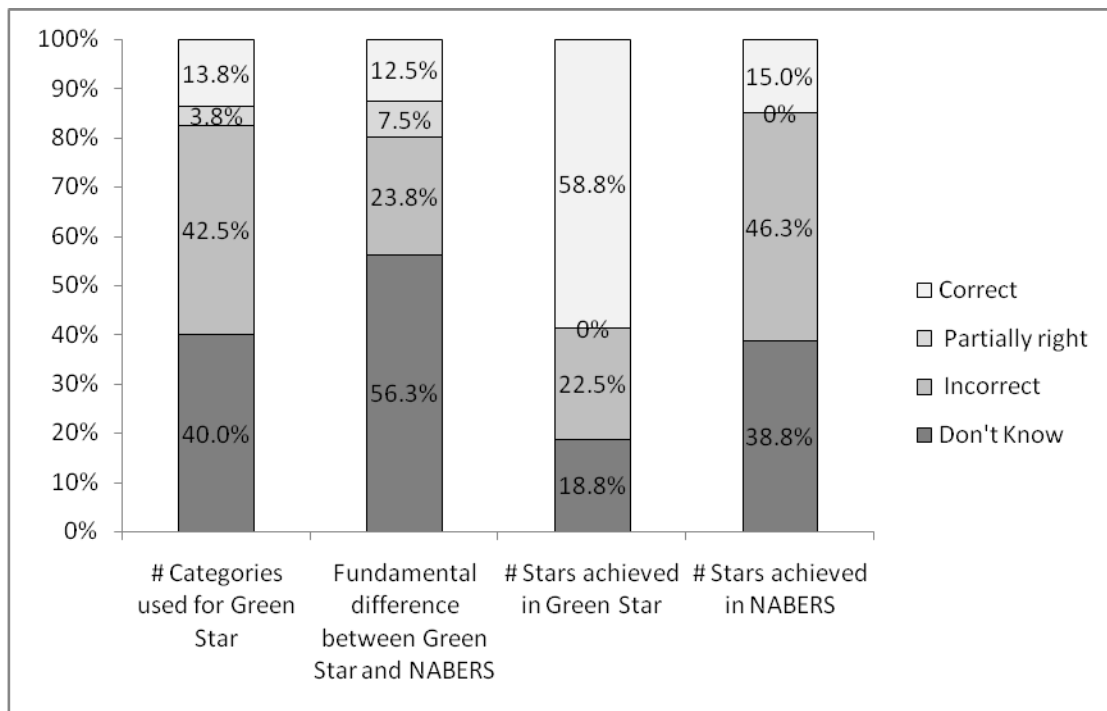Their Own Knowledge of Sustainability
Source: Author
Figure 10**

**Perceived Knowledge Levels Across Sample
Source: Author
Figure 11**

In spite of their own perception of their knowledge level, the following questions in the survey tested their knowledge with several simple questions about the rating tools. These were then analysed and identified as being either correct, partially right, incorrect, or didn't know as shown in Figure 12. The questions were:

1. how many categories does Green Star use to rate buildings?
2. in your opinion, what is the fundamental difference between Green Star and NABERS rating systems?
3. how many stars can be achieved in Green Star?
4. how many stars can be achieved in NABERS?

The results as to how many categories Green Star uses to rate and assess was poorly answered, with 40% of respondents indicating they did not know the answer, 42.5% getting it incorrect, only 3.8% getting it partially correct and only 13.8% getting it right. This question requires relatively basic knowledge about the Green Star tool, with eight environmental categories and one innovation category. Respondents were identified as being right if they identified the numbers eight or nine, eight plus innovation, or actually named all the categories.

The second question examined whether valuers knew the difference between Green Star and NABERS. Green Star is a design-based tool that examines the design potential of the building, whereas NABERS actually uses operational performance data to assess sustainability levels. This had even more valuers (56.3%) not knowing the difference between the two tools, 23.8% got the question incorrect, 7.5% were partially right, and only 12.5% were correct. This is a key concern, particularly when NABERS are used in BEEC's, and valuers will need to include this information in their reports.

Testing Valuers' Knowledge on Sustainability
Source: Author
Figure 12

The third question had a more positive response, with 58.8% of valuers getting the answer right, 22.5% were incorrect and 18.8% didn't know how many stars were awarded in Green Star. However, when examining the NABERS (question 4) result, it was disappointing, with 46.3%

getting the answer incorrect, 38.8% didn't know, and only 15% actually had the right answer. On average across the four questions, only 28% of valuers were correct, 34% were incorrect and 38% didn't know.

When taking into consideration their own perceived level of knowledge and when tested with four simple questions, which were largely answered incorrectly, the serious issue is raised of how knowledgeable valuers are when they are addressing sustainability in the valuation process. More importantly, how can sustainability be considered to have any relationship with value when those assessing values have little or no understanding of what sustainability is or how it is measured?

CONCLUSIONS

These findings raise a key issue for valuation practice and valuers, particularly when considering the knowledge development curve, the development of strategic and intuitive knowledge and the creation of heuristics, which are an integral part of valuation practice.

This research has found that sustainability in the market has developed and is continuing to develop as a prominent component of occupier and owner decision-making. However, at present, valuers have limited knowledge of sustainability and sustainability assessment tools. Consequently, identifying a relationship between sustainability and market value is still uncertain due to the current knowledge and practice of valuers. There is potential risk for owners, occupiers and a range of other stakeholders to be misled as to the implications of sustainability on value. Presently, it could be either an upside or a downside risk, depending on the valuer.

The drivers of market value, namely a long term sustainable cash flow and growth of the asset, are determined by more factors or characteristics than sustainability alone and even sustainability when extrapolated has many different facets. Consequently, the identification of a 'precise' relationship between sustainability and market value may never be ascertained. Yet certain components, characteristics or attributes deemed sustainable may assist in supporting fundamental value drivers though identifying and measuring these may also vary depending on a multitude of factors. To accurately and adequately identify, measure and consider such in the valuation process, a valuer will require considerable knowledge of sustainability, comparability of sustainability concepts and measurement tools and incorporation of stakeholder opinions and actions in light of this information.

This research has found that valuers do perceive a value relationship with sustainability and the key attributes affected include rents and rental growth, letting up ability, saleability and price. Valuers, generally, believe that sustainability attributes do have a positive influence on value. However, sentiment from the valuers' perspective has changed from 2007 to 2011 and the market, overall, has become more conservative with lower rankings of importance, investment and implementation of sustainability in the market. Whereas valuers' perception of occupiers' willingness to pay more for sustainable office space has remained unchanged from 2007 to 2011, owner willingness-to-pay has increased significantly in 2011 indicating that valuers believe owners are willing to pay more to own more sustainable real estate. The value relationships between valuation variables and sustainability, sustainability characteristics and market value, valuers believe are predominantly positive.

When undertaking a valuation, it was found that valuers would generally rely on an industry-rating tool, either Green Star or NABERS. However, the working knowledge at a basic level leaves a lot to be desired with poor levels of knowledge across the respondents. Consequently, this brings into question valuers' ability to assess, compare and make adjustments in light of their limited knowledge of systems and the perceived influence of particular sustainability characteristics on

valuations is concerning. Although it is evident that valuers are aware of change within the market and are adjusting sentiments to reflect this, if they have limited or no knowledge of what sustainability is, or how to compare it using industry rating tools, how can they justify adjusting any component in the valuation process or represent sustainability as having any relationship with market values?

This research has identified the increasing acceptance and maturity level of sustainability in the real estate market in Australia, which should see valuers developing the appropriate knowledge to be used in practice and in the creation of heuristics. The research has found that, regardless of the market change, valuers' knowledge has not significantly developed but they are now reporting on sustainability in valuation reporting. This highlights a major concern, that valuers are reporting on and potentially making adjustments based on limited or inaccurate knowledge. This is likely to see ill-informed and inaccurate valuations and reporting of market values being released into the real estate market, which may, in turn, lead to mispricing of assets and a consequential impact on other stakeholders and financial markets. There is an urgent need to consider how to up-skill and educate the valuation profession on sustainability assessment and consideration in the valuation process. This issue is not only prevalent in Australia but also worldwide, as shown by research by Lutzkendorf and Lorenz (2011) in Europe and Muldavin (2009, 2010) in the United States, who suggest further development of tools to assist in sustainability assessment and integration into the valuation process. As a result, more discussion and development of the training, education and tools for valuers is required.

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