Valuing Sustainability Part 2: Australian valuers' perception of sustainability in valuation practice

Abstract

Purpose The research investigates valuers' understanding of the value of sustainability in property and its' consideration in valuation practice in Australia. Exploring valuers' perceptions of the relationships between sustainability and market values, sustainability and valuation variables, and the value influence of industry sustainability certification schemes. Further, tracking prevalence of certified buildings in Australian commercial markets and the evolution of valuers' knowledge of sustainability certifications used in Australia.

Design / methodology / approach
This paper reports on the next rendition of a longitudinal study examining valuers practice in Australia. This research explores the evolution of Australian valuers' perception and knowledge of sustainability in valuation practice. The survey data has been periodically collected from practising valuers from 2007 to 2021. The survey questions investigate valuers' knowledge development, understanding, reporting and consideration of the relationship between sustainability and market value.

Findings
The results have identified the evolution of the influence of normative research on valuers' perceptions of the relationship between sustainability and value; with a clearer understanding emerging over time of where the value relationships are identified in valuation variables. Greater alignment between empirical Australian studies and valuers' perceptions of the influence of sustainability ratings on value, demonstrate the value connection for higher rated buildings under NABERS (energy rating) and Green Star. Whilst only 41% of the study's participants are including sustainability in their valuation reports, they include a higher level of commentary on building descriptions and initiatives, building ratings, and reporting of owner and tenant objectives, than in previous studies. Knowledge development relating to sustainability certification tool, NABERS was identified. This is likely linked to the introduction of mandatory disclosure legislation. This has also led to increased awareness and valuers' knowledge of the differences between the two key rating tools used in Australia.

Limitations
The research has several limitations: firstly, recruitment of valuers and the number of valuers' responses has varied over time; secondly, due to collection methods respondents have a greater likelihood of having an interest in and knowledge of sustainability creating potential for positive bias; thirdly, respondents may have responded to the survey in different years, but due to anonymity there has been no ability to track this. The results provide insights into the Australian valuation profession but may not be fully representative of the profession overall in Australia.

Practical Implications
The broader agenda of net zero, climate change, mitigation and carbon requirements, whether driven by market forces or government legislation, are generating changes in property markets as investors' reconsider their positions and model the implications of carbon emissions on their bottom lines. Introductions of policy and legislation over time in the Australian context have led to changes in valuation practice and increasing consideration of energy efficiency and ratings in the valuation of assets. However, further guidance and research still is required in Australia to assist in the knowledge development of valuers; and their ability to consider the emerging effects of sustainability, net zero and other market driven objectives including legislation, and how these may affect or influence their evaluation of market evidence and thus property values.

Originality / value

The research has tracked valuers' understanding, knowledge, and consideration of sustainability and energy efficiency in valuation practice since 2007. In that time the research has found that, as the market has evolved and more rated buildings are built (or retrofitted), so too has valuers' knowledge and consideration in valuation practices evolved. Valuers are more engaged with industry rating tools such as NABERS. This suggests that the Australian mandatory disclosure policies have contributed to changes in the market, which are then interpreted by valuers and reflected in their perceptions and consideration of energy ratings in valuation practice.

Keywords
Sustainability, rating tools, valuation, market value, commercial property, Australia

Paper type Research paper

1. Introduction

Valuers in property markets have a pivotal role in reflecting the market's response to the sustainability agenda in the built environment. Particularly as communities, businesses and governments realise the need for action in response to the growing awareness of the implications of climate change, and the need to consider substantial mitigation to minimise global warming and adaptation approaches to avoid the most severe consequences. In particular, coastal cities will be exposed to sea level rises and increasing extreme weather events resulting in building loss and damages; with direct, indirect, consequential losses affecting property values in the short and long-term (Warren-Myers et al. 2018; Warren-Myers and Hurlimann, 2021). The increasing voluntary aspirations and commitments, alongside evolving mandatory measures and regulation, particularly for emissions mitigations, has seen and will see increased changes to property investment, occupation and operation. Also the realisation by stakeholders of their property portfolio exposure to climate change risks, highlighted by benchmarking processes raising awareness to board levels, will start to be felt in property decision-making by owners, investors and occupiers. As a result, valuers will need to be aware of not only changing and increasing regulatory environment, but the sentiments of property stakeholders in their decision-making in regard to property.

Sustainability its' measurement and value have been a prominent element of property markets over the past two decades as noted in "*Valuing Sustainability Part 1: A review of sustainability consideration in valuation practice*" (Warren-Myers, 2022). The property market's consideration of sustainability has been primarily through industry based rating certification systems, either holistically (like BREEAM, Green Star, LEED) or single element consideration like energy with tools Energy Star (United States), Energy Performance Certificates (UK and Europe) and NABERS (Australia and New Zealand). The research and investment in sustainability over this time has developed from normative theories on sustainability and value, to later research identifying and quantifying the value of sustainability, in particular ratings relationship with values, rents and prices. This includes notable studies examining rating tools: Energy Star in the United states (Miller et al., 2008; Eichholtz et al., 2010; Fuerst and McAllister, 2011a; Holtermans and Kok, 2019), Energy Performance Certificates (EPC) in the UK and Europe (see Kok and Jenen, 2012; Fuerst, van de Wetering and Wyatt, 2013; and Fuerst, van de Wetering, 2015), and the National Australian Built Environment Rating System (NABERS energy) in Australia (see Newell et al. 2014; Gabe and Rehm, 2014). However, limited research as noted in Part 1, has examined the consideration of sustainability in valuations, and the deliberation of the effect of sustainability on market values. Despite direction and guidance from industry bodies (primarily RICS) and the International Valuation Standards Committee, indicating sustainability consideration, where appropriate, should be considered in the process of a valuationl; Michl et al (2016) and Warren-Myers (2013, 2016) found limited knowledge of and consideration of sustainability in valuations. Valuers have a pivotal role within real estate sectors and markets. Whilst on a practical basis their role is to assess and reflect the market value of individual properties; their reports are often utilised beyond the intended purpose of the original assessment of market value (Warren-Myers, 2013). Importantly, a valuers' role is to reflect the market in their assessments of market value, not lead the market in suggesting what should be paid for a property. Further, if the markets are *not* pricing sustainability (generally, individual attributes or ratings) then the valuer would be erroneous in incorporating these in their assessment. As noted by Warren-Myers (2012) much of the extant research of the time pondered how sustainability *should* affect value, whereas a valuer *should* be reflecting the market. A particular constraint on ascertaining the relationship between sustainability and market value in valuations, has been valuers' knowledge levels (or lack thereof) and the inherent need for compelling evidence as to how sustainability affects property sales and leasing transactions (Warren-Myers 2013, 2016; Michl et al. 2016). Whilst earlier investigations into valuation practices revealed a lack of data (Lutzkendorf and Lorenz, 2005; McAllister, 2009), a decade on, there is now an abundance of market data and evidence from various empirical studies on the matter, which are detailed in meta-analyses by Dalton and Fuerst (2018) and Leskinen et al. (2020). Whilst there are suggestions that sustainability is a consideration for investors, owners and occupiers, the challenges for valuers has been around their knowledge of sustainability and ratings and their capacity to undertake a thorough comparison and

evaluation of transactions in the market accounting for the variety of sustainability factors in the buildings. How sustainability is reflected in valuations and its' consideration by valuers, is impacted by a range of limitations. Initially limitations were focused on the paucity of data, definition of sustainability and what was considered sustainable, and understanding of the ratings tools and certifications measuring sustainability. However, despite more data available, and greater defined understanding of sustainability and key rating tools being used in the markets; the evolution of valuers' knowledge surrounding sustainability and rating tools, and their consideration and reporting in practice has been slow to evolve (Michl et al. 2016; Warren-Myers, 2016).

This research contributes to the body of work examining valuers' practice and consideration of sustainability in valuation practice. It also seeks to explore knowledge of commonly used rating systems and understand the reliance placed on these rating systems in the Australian property market, and how policy interventions may have assisted in driving changes in practice. This study provides the latest contribution to an investigation into Australian valuers' and their perception of the relationship between sustainability and market value. As noted in Part 1, a synopsis was provided examining the evolution of sustainability certification tools and value connections and a discussion of valuation practices, guidance and education. This paper, Part 2, presents the history of sustainability certification of commercial property in Australia, which sets the context of the research focus of the paper. This is then followed by the longitudinal comparison of valuers' consideration of sustainability over two decades in Australia.

2. The Australian context of sustainability, energy efficiency and rating tools

As this study focuses on the Australian property market, an understanding is required of guidance provided by industry bodies for valuers, the key rating tools in the local market, and the quantum of certifications in the commercial property markets.

2.1. Industry Body guidance and information for valuers

The Australian Property Institute (API) and the Royal Institution of Chartered Surveyors (RICS Oceania) are the two primary valuation industry bodies in Australia. The majority of valuers are certified by the API. Information, white papers and continuing professional development events were conducted by both the API and RICS on sustainability in property over the past two decades. However, the first formal advice to valuers was in 2011, when the RICS Valuation Information Paper VIP 13 2009 was adapted into the Australian context in 2011 by RICS (Oceania), "*Sustainability and the valuation of commercial property (Australia)"*. Covering the content of the RICS VIP 13 and expanding to cover in the Australian context: the measurement of sustainable performance (primarily rating tools NABERS and Green Star), how valuers should use information, sustainable building issues for consideration, and valuation methodology suggestions. This resource provided insights into the complexity of sustainability measurement and noted some of the challenges in the consideration of sustainability in the process of valuation as previously discussed by Warren et al. (2009), Warren-Myers (2009), Warren-Myers and Reed (2010), Reed and Warren-Myers, (2010) and Reed et al. (2011). Whilst the RICS VIP 13 and its' Australian interpretation, were likely highlighted to RICS members in Oceania (including Australia), the majority of valuers in Australia are certified under the Australian Property Institute (API). The API did not at this time, before or after, provide directions to valuers through any formal Valuation Information Papers or Guidance Notes to consider sustainability in valuations. However, the API did support a white paper by Bowman and Wills (2008) "*Valuing Green"* (which was also accompanied by a roadshow of continuing professional development events for members across Australia), and the quantitative analysis by Newell et al. (2011) "*Building Better Returns"* which examined the value implications of Green Star and NABERS ratings for commercial offices (this was later published in an academic journal in 2014). The API did provide more informal information and education opportunities through member-based newsletter articles and continuing professional development events. Commonly these have been focused on information about the introduction or

changes to the mandatory energy efficiency disclosure program, and presentations on sustainability more generally and in the context of both commercial and residential property. However, there have been no Valuation Information Papers or Guidance Notes for valuers from the API, to date. For those members of RICS, update to the 2009 VIP to a Guidance Note in 2013 and inclusion in the RICS Red Book in 2014 (global) meant valuers are required to follow the direction set as mentioned in Part 1. Most recently, RICS has updated the Guidance Note to the 3rd Edition in January 2022 (RICS, 2022). The recent International Valuation Standards Committee (IVSC) perspectives paper "*ESG and Real Estate Valuation*" and updated RICS Guidance Note, will likely be a point of discussion for both industry bodies in Australia, hopefully leading to further education opportunities and importantly more specific guidance to valuers.

2.2. Sustainability assessment and certifications in Australia

The key rating systems in Australia are National Australian Built Environment Rating System (NABERS) (which was previously the ABGR) and Green Star. These rating certification tools have now been operating in the commercial office sector for 20 years (NABERS 2021). In 2010 the Commercial Building Disclosure program was launched requiring a Building Energy Efficiency Certificate, of which a NABERS energy rating was required to be displayed on all advertising material and information (Australian Government, 2021). Table 1. Provides an overview of NABERS, the Building Energy Efficiency Certificate and Green Star, also noting the key prominent changes that have occurred over time.

Table 1. NABERS, BEEC and Green Star Certification schemes: key information

	NABERS National Australian Built Environment Rating System		**BEEC** Building Energy Efficiency Certificate		**Green Star**	
Assessment	Operational, measurable building data. Separate certification for energy, water, waste, indoor environment quality (IEQ), and Carbon Neutral.	NABERS Energy considers: base building, whole building or tenancy operational energy consumption	As part of the *Commercial Building Disclosure* a NABERS energy (typically base building operational energy) + lighting assessment and general energy efficiency guidance are required.		Design based, holistic, targets 7 environmental categories: management, indoor environment quality, energy, transport, water, material, land use and ecology plus an innovation category. Green Star – Design and As Built; Green Star Buildings; Green Star - Interiors; Green Star – Communities; and Green Star - Performance	
Property Types	Initially office (base building, whole building, tenancies) hotels, shopping centres, apartment buildings, offices, data centres, residential aged care, public hospitals and retirement living.		Office for sale or lease above 1,000 sqm (from 2017) Previously in 2010, any office greater than 2,000 sqm for sale or lease.		Initially office (focus on new build/major redevelopment). Expanded to a range of property types, including mixed use, shopping centres, education buildings, multi-residential, industrial, precincts and community developments Recently a Green Star Homes standard was released in 2021.	
Star Rating	Originally 0 – 5 and expanded to 0 – 6 stars	(½ stars)	0 – 6 stars	½ stars	4 – 6 stars for most schemes, with Performance certification rating 1 – 6 stars	No ½ stars
Rating frequency	Annual	Voluntary (unless required for BEEC)	Annual - if required	Mandatory	Once off for most schemes, Performance has annual compliance and 3 year re-certification	Voluntary
Administrator	DECC (DEUS) NSW Government		Federal Government		Australian Green Building Council	
Date Introduced	1998	Previously ABGR	2010		2002	

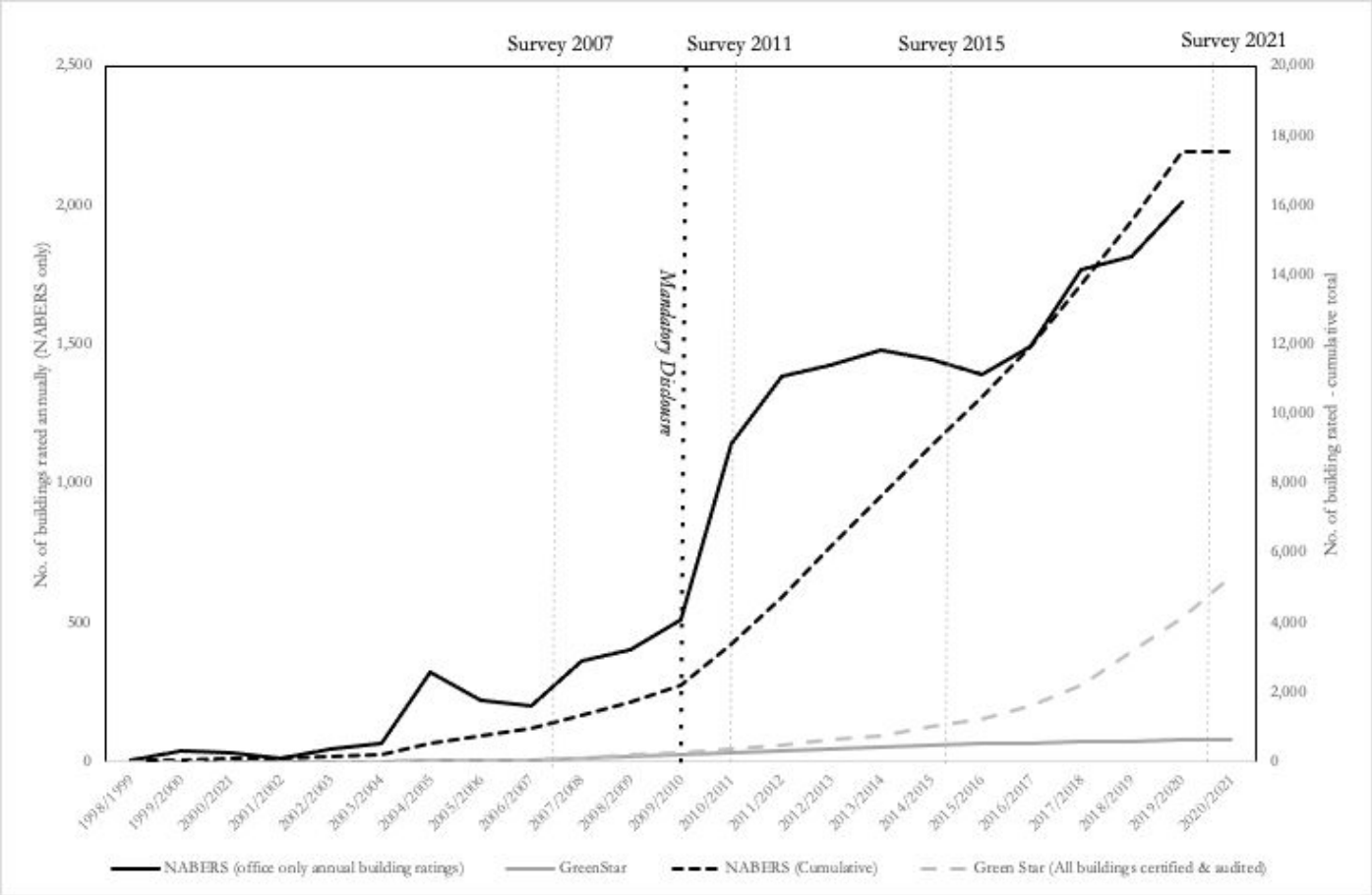
Additional information	2003/2004 all NSW Government occupied office buildings required a rating (NABERS, 2020). 2006 saw the Commonwealth Government specify objectives for requiring owned or leased spaces to have a minimum rating of 4.5 stars 2007/2008 with NSW Government also requiring a minimum of 4.5 stars for all owned or leased spaces	*Building Energy Efficiency Disclosure Act 2010*. Requires NABERS energy rating to be disclosed on any advertising or information for a building for sale or lease initially applied to all office buildings in excess of 2,000sqm, later reduced to 1,000sqm in 2017	Launched initially as a Design tool for new office buildings, later supported by an As-built tool to verify. Expansion proceeded to other property types (as noted above) and the office version was adapted to the New Zealand office market in 2007. A performance version of the tool was developed and launched in 2014, with 400 buildings certified under this program. Later streamlining of the Green Star has seen Design & As-built become one certification, with a general Buildings certification tool, Communities tool, Interiors tool and the new Homes Standard

Source: NABERS (2021a); Australian Government (2021); GBCA (2021a)

2.3. Uptake of sustainability assessment and certifications in the Australian commercial property market

According to NABERS (2021b), the proportion of commercial office buildings rated with a NABERS energy rating is 78% of office buildings in Australia. Whilst the Property Council of Australia (PCA) (2021a) estimate total Green-Star rated office stock as at October 2021, to be 8,137,905sqm segregated by office markets, when compared to the PCA analysis of total office stock across Australia (some 25,972,909sqm), this suggests that Green Star Certified projects account for 44% of office space (PCA, 2021b). As shown in Figure 1, there has been substantial increases in the number of certified properties over time, suggesting, at least in Australia, that a quantum of evidence should be available. The mandatory Commercial Disclosure Program certainly had the largest effect on the ratings, showing a large jump in ratings in the 2010-2011 year.

Figure 1. Rating tool certification in Australia over the past two decades.



Source: Data provided by NABERS (2021c) and Green Building Council of Australia (2021b)

The evolution of sustainability rating certification systems in the Australian market has grown substantially, assisted greatly by government interventions, and also market competition. Leading to a property sector that now more commonly communicates sustainability objectives through the different office building rating systems NABERS and Green Star. The Australian commercial building sector is seen to be a world leader, with many of the REITs, funds, developers and companies prominently noted in the peer benchmarking sustainability performance assessment system, GRESB where the Oceania region has maintained a strong position for 10 straight years (Property Council of Australia, 2020; GRESB, 2021). Whilst the market has been embracing sustainability ratings, the question as to whether sustainability levels or star ratings has a relationship with the underpinning asset values is still a topic of conversation. The number of rated buildings in the market have increased substantially, yet there have been limited empirical studies that have examined the effect of these ratings on the sale prices or rents in the Australian market. Only two studies, to date, have sought to ascertain through hedonic analyses the value of these sustainability ratings on rents and value, with variations in opinions. Newell et al. (2014) examined commercial office markets using 2011 data (just after the introduction of mandatory disclosure) finding premiums associated with both energy ratings and Green Star. Yet Gabe and Rehm (2014) conducted a comprehensive study of the Sydney CBD leases and didn't find premiums for energy rated (NABERS) buildings, although discounts were noted for poor performing ones. There has not yet been another study examining the market, and increasing market evidence suggests further exploration of the market is required.

Despite the limited academic empirical analysis of office markets in Australia, Warren-Myers (2009, 2011, 2013, 2016) has investigated the valuation profession and their understanding and perception of the relationship between sustainability and market value in a longitudinal study. Subsequent work by Thanh Le and Warren-Myers (2018) undertook a focused study of commercial institutional grade property valuers and Warren-Myers et al. (2020) examined residential valuers. Warren-Myers (2009) hypothesised that as the number of buildings in the market increased, so to would the knowledge development of valuers in their assessment and consideration of

sustainability in valuations. This research continues to test whether this hypothesis holds true, presenting the fourth replication of the study since 2007. The following section will provide details on the methods and previous survey data collection, followed by the results and discussion, the practical implications and conclusions.

3. Method

The research presented in this paper reports on the longitudinal study that has been conducted over the past 13 years. The longitudinal study began data collection in 2007 (project inception was 2006), with a subsequent survey conducted in 2011 in a post-GFC market, and after the introduction of the mandatory disclosure program, requiring the display of NABERS ratings on commercial properties for sale or lease greater than 2,000 square metres. The third survey was conducted in 2015, when the mandatory disclosure program had been established for four years. The final round of the survey collected data during the latter half of 2020 and early 2021. This study draws comparisons between the most recent survey and previous survey results. It should be noted that the 2020/2021 data collection was delayed due to the Covid upheaval of the industry.

The objective of the research is to investigate the change in valuers' perception of the relationship between sustainability and market value; explore valuers' knowledge development over time; and consider influences that may translate to increasing consideration and reporting of sustainability in valuations. The research objectives addressed in this research through the longitudinal survey are to investigate and examine:

1. The change in valuers' perception of the relationship between sustainability and market value;
2. The development of valuers' knowledge of sustainability and consideration in valuation; and
3. The implications of industry change on knowledge development.

The original survey design has maintained much of the original survey questions from 2007 that focused on perception of the relationship between sustainability and value; however, outcomes from the initial survey indicated further exploration and testing of valuers' knowledge on sustainability was required. As a result, surveys from 2011 have incorporated question that have probed valuers' knowledge, experience and understanding of sustainability, and industry-based rating tools. In the 2020 survey, further exploration of the role of industry-based rating tools and the effect of the Commercial Building Disclosure program on valuation practice and consideration of sustainability in their assessments of market value were included.

The survey has been developed in online survey platforms, Survey Monkey was used in 2007 alongside paper-based distribution by the Australian Property Institute and Royal Institution of Chartered Surveyors. Subsequent surveys were solely created using online survey software Qualtrics and links were distributed through industry body online newsletters. For consistency across surveys, only qualified valuers that are practising (or have practised) with a focus on commercial property in Australia were included. The survey comprises predominately structured closed-ended responses, either yes/no or Likert based questions, with some open ended questions to allow for more detailed perspectives and clarifications to be provided.

The research has a number of limitations:

- Recruitment of respondents' interest in sustainability, and the likelihood of respondents having a greater interest and knowledge of sustainability, has potential to generate positive bias in responses – in particular the 2015 data collection had a much smaller number of responses, so this bias is likely to be more considerable;
- Confidentiality and the anonymous approach to survey collection means that it is unknown whether the same valuer has responded to surveys over the different time periods of collection;

- Variation in response rates over time, which may have to do with broader market interest in sustainability and market conditions at the time, again may highlight the bias of those who have an interest in sustainability are those responding to the survey; and
- To maintain consistency for comparison over the different iterations of the survey, questions have been kept from original survey development, acknowledging that some aspects have changed over time, but where warranted changes to the survey being only the addition of new questions, rather than amendment of existing to allow consistency and comparison.

These limitations suggest that the interpretation of the results is effectively a perspective of the Australian valuation profession, and may not be fully representative of the profession overall in Australia, due to the above noted limitations. Also, because of the bias towards respondents being interested in sustainability and likely having more knowledge, the results should present a more positive viewpoint of the sector in Australia. The longitudinal aspect of this survey, however, does present an important insight into the knowledge development overtime and valuation practice processes and perspectives.

7. Results and Discussion

The distribution of responses over the survey years and the level of experience of respondents has seen some change over time, yet it is clear that there remains a strong response rate from senior members of the profession, as well are early career valuers. (Noting that only Certified Practising Valuers are included in the reporting of results). Table 1 provides the survey respondents and experience of valuers across the survey periods. Warren-Myers (2011) explored the implications of valuation experience on response and knowledge regarding sustainability, finding that more experienced valuers' had greater understanding of sustainability. The survey respondents over time have seen a greater representation from valuers with greater than 5 years of experience, from 54% in the initial survey in 2007 to between 67% - 77% for later years. As noted in Warren-Myers (2016), the smaller sample of the 2015 data collected may have some level of bias towards valuers engaged or interested in sustainability, this again needs to be considered, when drawing comparisons to the larger samples obtained in other years.

Table 1. Survey sample over periods 2007, 2011, 2015 and 2021

Survey Year	Number of Respondents	Experience of Valuers				*Experienced Respondents*
		Less than 5 years	5-10 years	10-15 years	More than 15 years	*More than 5 years*
2007	110	46%	34%	5%	15%	*54%*
2011	57	33%	19%	18%	30%	*67%*
2015	31	23%	16%	0%	61%	*77%*
2021	63	33%	13%	10%	44%	*67%*

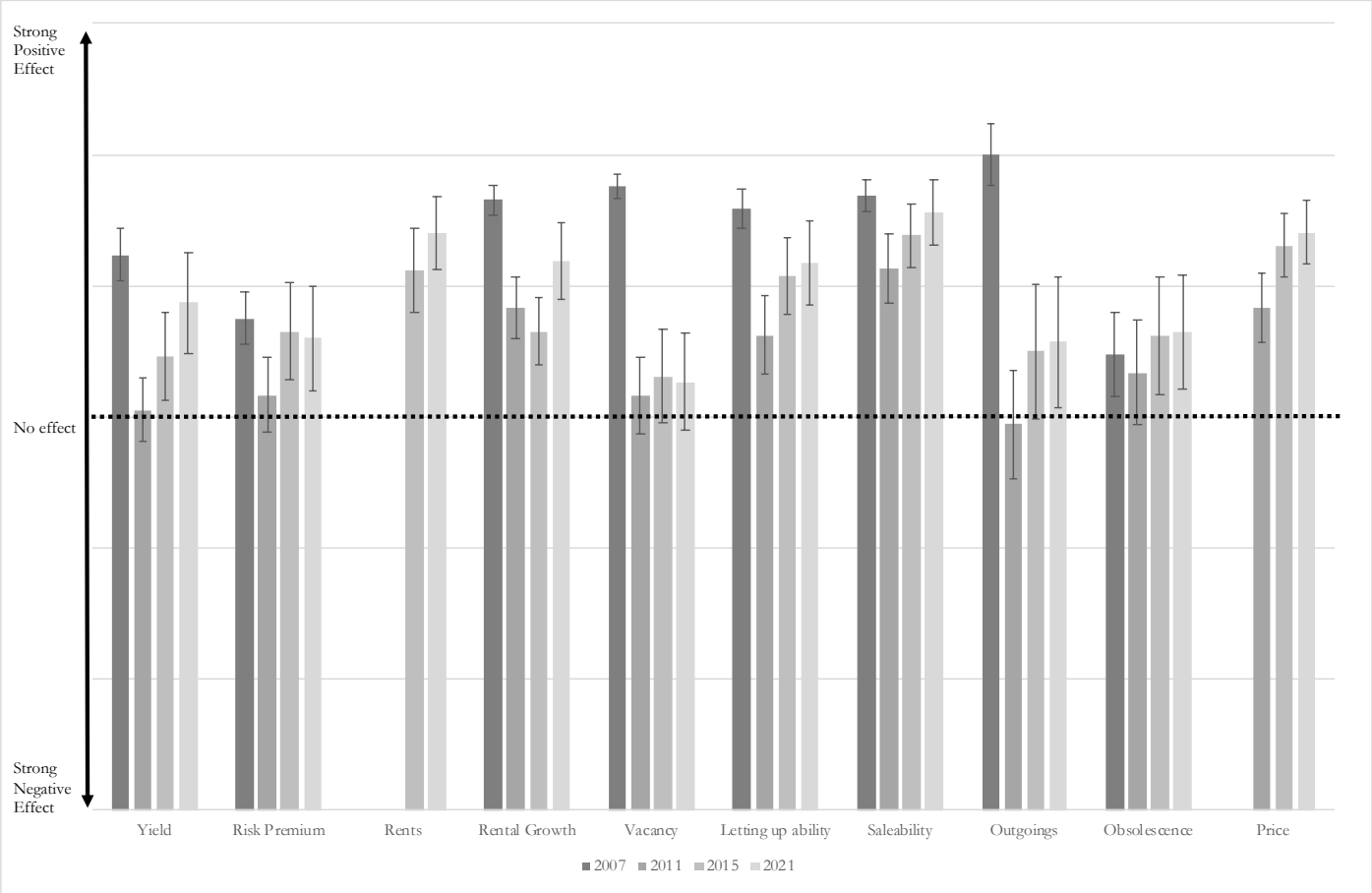
The following sections provide the results, comparisons over the survey waves, and relevant discussion of literature. These are structured to provide an understanding of valuers' perception of sustainability and its relationship with value and valuation variables, their understanding of the market's consideration of sustainability, the influence of rating tools on value, levels of sustainability reporting and valuers' knowledge of sustainability and rating tools.

Perception of sustainability and its' relationship with value

Industry and academia have pondered the long-term question of *What is the relationship between sustainability and value?* Leading to much discussion over the empirical quantitative studies, calculations of investment worth and market value. Over the study period sustainability has been identified, by valuers' in their own opinions, that

sustainability does have some effect on valuation variables that contribute to assessments of market values. The valuation options provided to valuers in the survey, were developed from the literature at the time of the original survey (2007), with additional elements added over the years as suggested in feedback in the surveys and the emergence of their discussion in the literature as noted in the literature review. Figure 2 depicts over time the changes in valuers' perceptions of how sustainability has an influence on different valuation variables.

Figure 2. The effect of sustainability on valuation variables



Notes: *n*(2007)=110, *n* (2011) = 57, *n* (2015)=31, *n* (2021)=63. Error bars show 95% confidence level.
A 7-point Likert scale was used to ascertain the effect of sustainability on valuation variables: 1=Strong negative effect, 2=Moderate negative effect, 3=Weak negative effect, 4=No effect, 5=Weak positive effect, 6=Moderate positive effect, 7=Strong positive effect.

Notable changes in the 2021 include an increase in the positive effect on yields, rents, rental growth, saleability, and price. However, changes between 2011 and 2021, identify changes to valuers' perceptions of the effect on yield and outgoings. Finally in comparison between 2021 and 2007, yield, vacancy, letting up, saleability and outgoings all demonstrate significant differences (*t*-test, $p<0.001$), which was also noted in Warren-Myers (2016) comparing 2007 to 2015. As noted in previous studies, the normative assumption in 2007 that outgoings reductions would have a positive effect on value, was likely driven by many of the industry and academic publications at the time, suggesting reduced operational expenditure would be a result of a more sustainable building (see Bartlett and Nigel, 2000; Paumgartten, 2003; Kats et al., 2003; RICS 2005; GBCA, 2006, 2008; Ministry for Environment, 2006, 2007). However, over time, this would appear to have reduced in its' perceived effect, but 2015 and 2020 have held a consistent view that it has no effect on value, with no statistically significant differences between 2015 and 2020. This was also commented on:

> *The issue as I see it, is that the sustainability / energy efficiency items installed actually increase outgoings, thus lowering net rental. Despite occupation benefits for an occupant these are not part of normal outgoings so do not seem to flow through to the lessor / owner.* (V63)

Another, normative perception was the idea that sustainable buildings would have reduced vacancy levels (GBCA, 2006; Bowman and Wills, 2008), and this may have influenced valuers' response in 2007. Yet in

subsequent versions of the survey, it was found in valuers' opinions that sustainability has limited if any effect on a building's vacancy profile. Disproving some of the earlier assumptions of the benefits of sustainability. However, there appears to be greater consensus over time that sustainability has a moderate positive effect on value, alongside a consistent view across surveys that it also enhances the saleability of the asset. This is also reflected in rents being positively influenced by sustainability and long-term perceptions of rental growth. Interestingly, sustainability's effect on risk premium and yield were identified as having no effect in 2011, yet this has turned positive in subsequent years, suggesting sustainability is having a slightly more positive effect on these valuation variables and consequently values.

Sustainability comprises a range of different dimensions, the attributes in buildings that have been tracked in the survey over time include energy efficiency, water conservation, low emissions, indoor environment quality (IEQ), materials, renewable energy, rainwater collection (and recycling) and management. The selection of these attributes in 2007 was guided by the prominence of the rating tools in Australia at the time, namely Green Star and NABERS. Green Star at the time wrapped up multiple criteria and dimensions into a single value and simplified certification statement, ie. 6-star Green Star Certified. However, the building could have achieved the rating through a range of different pathways, making buildings holding the same Green Star certification, fundamentally different buildings in terms of their sustainability attributes. Therefore, understanding of the different sustainability attributes and the effect it may have on a building's value was an important consideration. Over the survey periods, valuers' have ranked, sustainability attributes viewed as being most important and are perceived to have the greatest positive effect on value. Table 2 demonstrates the change in valuers' opinions from 2007 to 2011, which saw Energy Efficiency and Water Conservation go to the top of the ranking, with IEQ and Management dropping back to 3rd and 4th respectively (shown in Table 2 - where bolded and underlined attributes indicate improvement in rankings and italics for demotion in the ranking). Yet, 2015 saw no change to the rankings, suggesting the consistency in view between the survey periods.

In 2021, Energy Efficiency remained at the top, and can be considered the prominent long-term attribute that is perceived to have some effect on value compared to the other sustainability attributes. However, IEQ, Renewable Energy and Low Emissions moved up in their rankings in 2021. The adjustment to these attributes is not surprising given the increasing focus on climate change and carbon emissions in the sector, the increasing focus on net zero, driving not only energy efficiency considerations but also renewable energy and increasing awareness of emissions. The IEQ which was a leader in 2007, also makes a move up the ranking list. This appears to align with market sentiment of the focus on building quality and landlords improving amenity and services within the building (Colliers, 2019). The other aspect, maybe the impact of Covid-19, on the office environment, and such the effects that the IEQ and flexibility of that space may have a much larger role to play in building's profile and attractiveness to tenants, and also affect the value considerations (KPMG, 2021).

Table 2. Ranking the sustainability attributes with the strongest effect on value

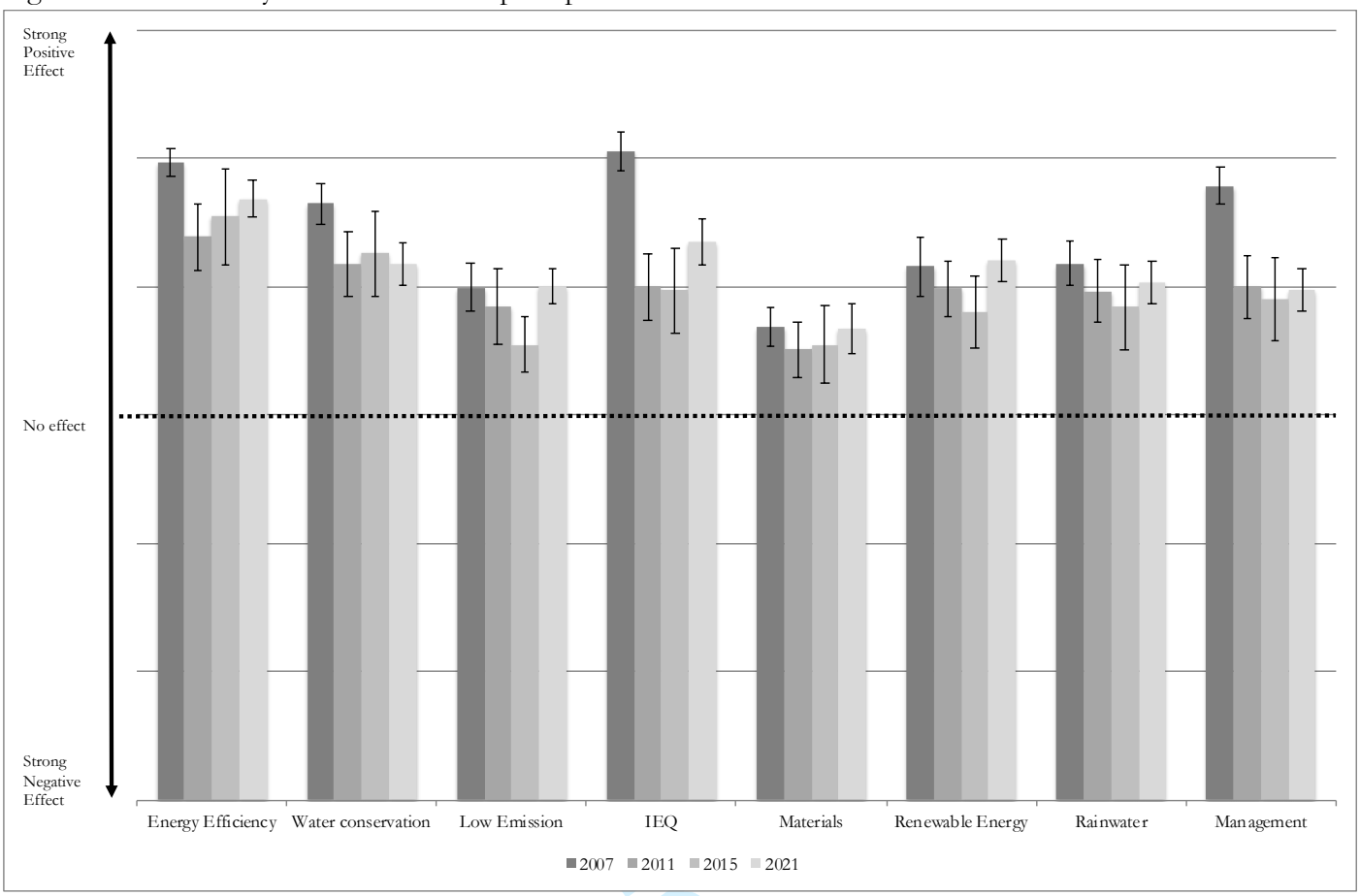
Rank	2007	2011	2015	2021
1	IEQ	**Energy Efficiency**	Energy Efficiency	Energy Efficiency
2	Energy Efficiency	**Water conservation**	Water conservation	**IEQ**
3	Management	***IEQ***	IEQ	**Renewable Energy**
4	Water Conservation	***Management***	Management	Water Conservation
5	Rainwater collection & storage	Renewable energy	Rainwater collection& storage	Rainwater collection & storage
6	Renewable energy	Rainwater collection & storage	Renewable energy	**Low emissions**
7	Low emissions	Low emissions	Low emissions	***Management***
8	Materials	Materials	Materials	Materials

Rankings aside, examining the sustainability attributes and valuers' perception of how this may affect value (positively or negatively) are shown in Figure 2. Similar to the analysis of which valuation variables are perceived to be influenced by sustainability, the examination of sustainability attributes and its' effect on value aligned with the more normative views initially in 2007 (see Bartlett and Nigel, 2000; Paumgartten, 2003; Kats et al., 2003; RICS 2005; GBCA, 2006, 2008; Ministry for Environment, 2006, 2007). Subsequent years seemed to maintain greater consistency across years, particularly between 2011 and 2015, where minimal changes were noted and were not statistically significant. It is perceived by valuers that all sustainability attributes noted do have some positive influence on value. However, statistically significant differences (*t*-test, $p<0.05$) were identified between 2015 and 2020 were noted relating to valuers' perceptions of Emissions and Renewable Energy. The interesting observation in Figure 3, is that both Emissions and Renewable Energy have returned to comparable levels of effect on value as in 2007. This change was also noted in valuers' ranking of importance of various sustainability attributes in Table 2. This result is likely a reflection of the changing attitudes and activities in the Australian property market, with a study of the ASX200 where 43% were found to have a net zero target or aspiration, of which 29% have 2050 net zero emissions targets comprising 36% of the total ASX property sector market capitalisation (Proudlove et al. 2019). The remaining 14% have made commitments but without clear pathways; and the other factor in the report is that not all emissions are being considered in these statements (ibid). This is also reflective of recent research by the IGCC, which found climate related risk disclosures (in response to the Taskforce on Climate-Related Financial Disclosures) were not being consistently reported, posing issues for comparison in the future, similar to process of disclosing emissions.

A further example of this discussion is around net zero buildings, where emissions disclosed are only related to base building operations, yet stating achievement of net zero buildings emission targets (GRESB, 2021). Australia has a voluntary Climate Active Carbon Neutral Standard for Buildings, allowing buildings to state and claim carbon neutral status through base building operations or whole building. This is concerning in terms of how this will be perceived by other actors, and the lack of clarification when claims are being made regarding Carbon Neutral buildings and portfolios. The Standard even acknowledges this and warns in section 1.4.1 that parties making claims should consider obligations under the Australian Consumer Law, of which the property and building industry in Australia to date have a poor record of providing clear communications (Warren-Myers, Cradduck and Bartak, 2021). It is anticipated that as a result of COP26 and increasing market drivers to disclose emissions, that this Standard and claims will be under the spotlight in years to come. If governments create clear policy and legislation mandating minimum performance, the issues will also become more prominent in valuations and have greater effects on valuation processes and values, as noted by valuers:

> *When developers and government treat this as an issue, then valuers will do so as that will then be reflected in the market.*(V21); and
>
> *If government regulation on sustainability in buildings increases so will property values of sustainable buildings.* (V25)

Figure 3. Sustainability attributes and the perception of effect on value



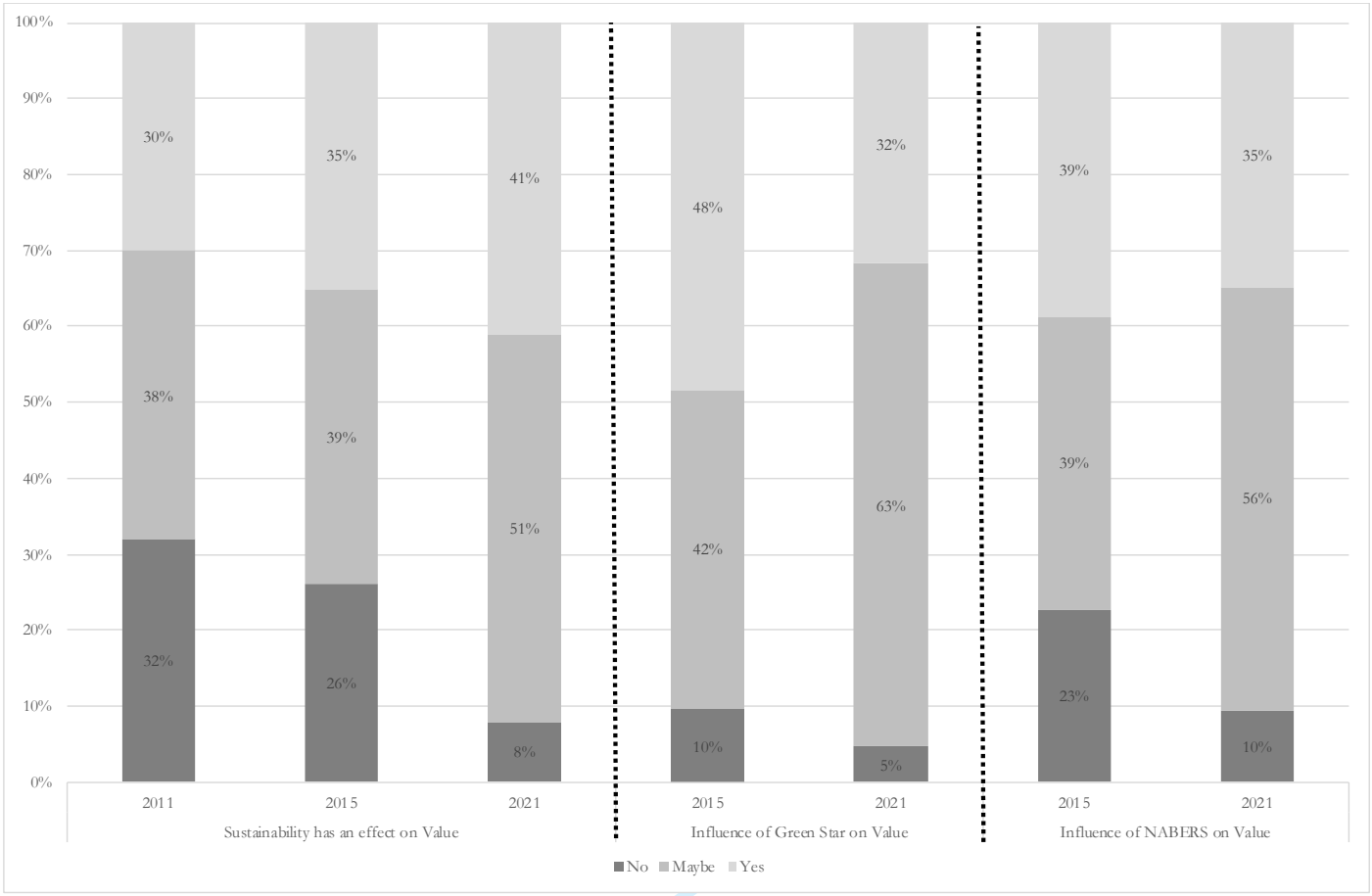
Notes: *n*(2007)=110, *n* (2011) = 57, *n* (2015)=31, *n* (2021)=63. Error bars show 95% confidence level.
A 7-point Likert scale was used to identify the effect of sustainability attributes on value: 1=Strong negative effect, 2=Moderate negative effect, 3=Weak negative effect, 4=No effect, 5=Weak positive effect, 6=Moderate positive effect, 7=Strong positive effect.

Valuers' perceptions of the influence of sustainability and rating tools on value

The effect of sustainability on value as perceived by valuers is shown in Figure 4, and the observation over the three survey periods (2011, 2015 and 2021) has demonstrated a greater proportion (41% in 2021) of valuers believing it does. 51% think maybe sustainability has an effect and only 8% don't think there is an effect, but this is down from 32% in 2011. This aligns with other observations of the study that there is increasingly a perceived relationship between sustainability and value; and the consensus appears to be increasing over time. However, as pointed out by one valuer,

> *It is to some extent difficult to separate the value attributable to sustainability as sustainable features are typically seen in new buildings which have their own inherent benefits. For example no one would build an office building now without targeting a strong Greenstar / NABERS rating, so there are not examples of new buildings without such features by which to compare if it is the sustainability or other factors that are influencing value.* (V19)

Figure 4. The influence of sustainability and sustainability ratings on value



Notes: *n*(2011) = 57, *n* (2015)=31, *n* (2021)=63

It is clear in valuers' opinions that sustainability has seen an increasing influence on value, with a much smaller number of valuers' indicating sustainability had no influence on value. Further, over the last two decades specifically there has been an evolution of two particular rating tools within the commercial market, namely Green Star and NABERS (as described in Table 1). Which as noted by V19 that office buildings would now not be built without a strong or high, Green Star and NABERS rating target. Both tools started out as voluntary, with NABERS (reporting on operational energy consumption) being mandated as part of the Commercial Building Disclosure program in 2010, thus requiring inclusion of the NABERS certified rating on any information relating to the sale or lease of the office building. Which was noted in the free response comments,

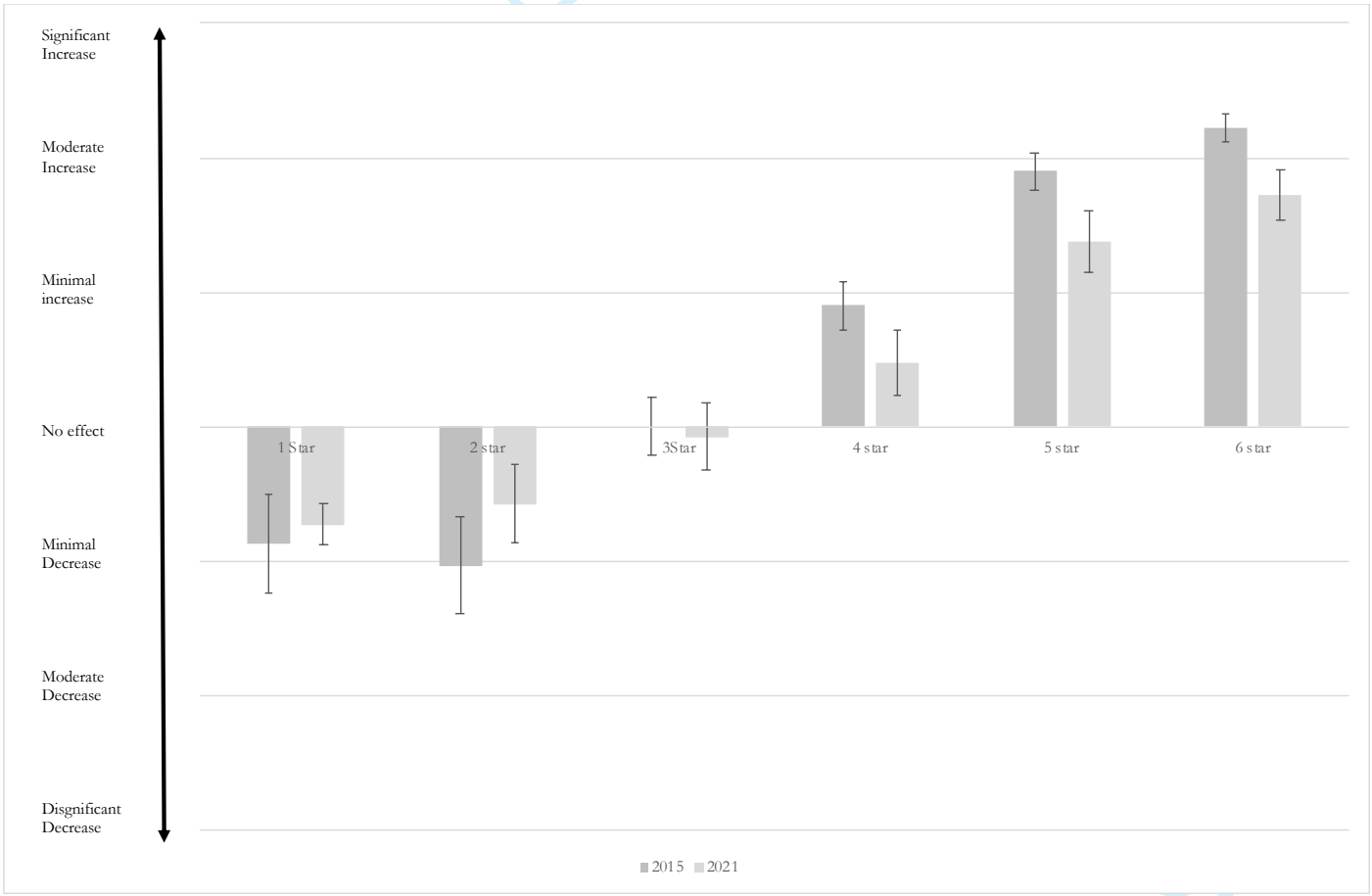
> *We are seeing many institutional owners more willing to spend additional capex to increase their NABERS Energy and Water ratings. This is evident in plant equipment upgrades in their capex forecasts. However since Covid, owners have been forced to reduce their capex spending to the bare minimum, and sustainability may be seen as a lower priority, unless they were looking to sell the asset within a few years time.* (V16)

The perceived influence of the effect rating tools on value is noted in Figure 4 (Green Star on the left and NABERS on the right). The difference between 2015 and 2021 is the reduction in the number of valuers indicating that the ratings have no influence on value, reducing by 5% and 13% respectively. A greater proportion of valuers in 2021 perceive that NABERS and Green Star may or do influence the value of an asset. However, the differences in sample sizes may be reflected in this analysis, with limited responses in the 2015 survey, these participants may have been more engaged in the sustainability agenda, whilst a larger sample in 2021 maybe more reflective of the broader market perception. Further, there are dimensions to these rating tools, which may mean further interrogation as to the different levels of star ratings and whether these have an influence on values.

Delving into a more detailed analysis of the influence the rating tools may have on value, Figure 5 and Figure 6 examine the NABERS and Green Star (respectively) rating certification bands. Valuers' perceive the 3-star rating under NABERS as being the norm, or neutral point (which might also indicate why in Figure 4 a NABERS certification per se *may* influence value); with perceived discounts for ratings lower than 3 stars, and a premium for those 4 stars and above. The differences between survey years has seen a reduction in the perceived effects on values in 2021, with statistically significant ($p<0.05$) differences observed for 2 star, 3 star, 5 star, and 6 star ratings. The interesting consideration here, is that valuers' perceptions suggest some similarities with findings by Newell et al. (2014), where lower rated buildings were perceived to be discounted, whilst upper ratings achieved premiums.

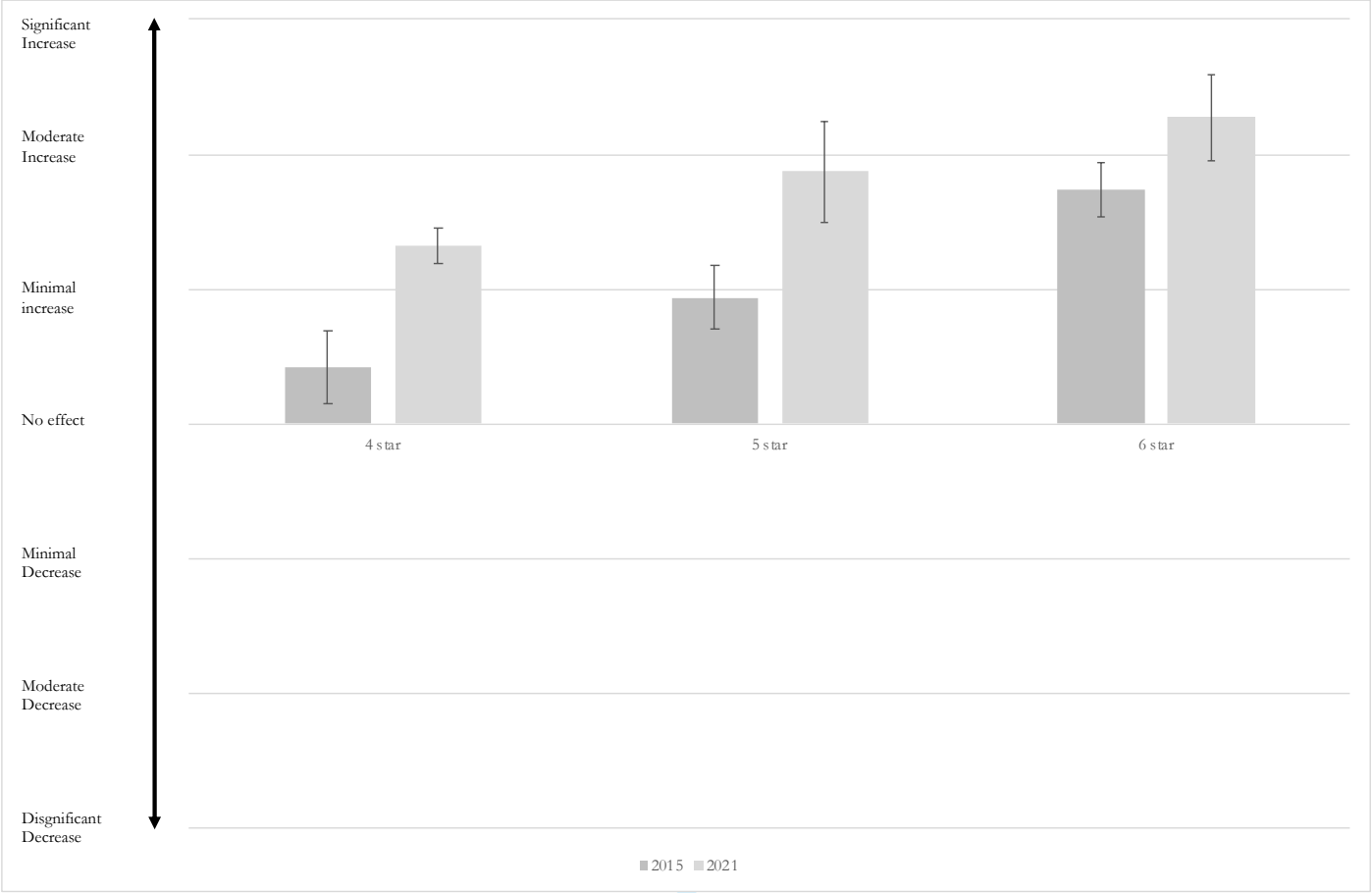
The Green Star rating as shown in Figure 6, traditionally based on the design and as-built aspects of the building, are considered by valuers to have a positive and an increased affect on values. The differences between the survey years has seen a statistically significant ($p<0.05$) change in the perceived effect a Green Star rating has on values. With 4 stars, 5 stars, and 6 stars demonstrating increases the influence of the rating on value. Which suggests that while NABERS ratings influence on valuers has diminished slightly, the influence of Green Star on values is perceived to have increased.

Figure 5. The influence of a particular NABERS star rating on value



Notes: *n* (2015)=31, *n* (2021)=63. Error bars show 95% confidence level. NABERS influence on value used a 7-point Likert scale to grade the effect on value: 1=Strong negative effect, 2=Moderate negative effect, 3=Weak negative effect, 4=No effect, 5=Weak positive effect, 6=Moderate positive effect, 7=Strong positive effect.

Figure 6. Influence of Green Stars ratings on values



Notes: *n* (2015)=31, *n* (2021)=63. Error bars show 95% confidence level. Green Star Influence on value used a 7-point Likert scale to grade effect on value: 1=Strong negative effect, 2=Moderate negative effect, 3=Weak negative effect, 4=No effect, 5=Weak positive effect, 6=Moderate positive effect, 7=Strong positive effect.

Sustainability Reporting

Sustainability reporting in valuation practices since 2007 to 2021 has seen variability in reporting levels, as shown in Table 4. Interestingly the highest rate of reporting on sustainability in reports was in 2011, this dropped off in 2015 and has since increased in 2020 to 41%. Suggesting that sustainability reporting is not necessarily common practice for all valuers' reports.

Table 4. Report of sustainability in valuation

	2007	2011	2015	2021
Yes – I report on sustainability in reports	40%	54%	32%	41%
No – I don't report on sustainability in reports	60%	46%	68%	59%
n =	*110*	*57*	*31*	*63*

Exploring this theme further, a comparison of valuers' reporting considerations between 2011 and 2020 are shown in Table 5. Of those valuers who did indicate that they report on sustainability, significant differences were noted between 2011 and 2021, with t-test results indicating significant differences between responses ($p < 0.05$), across the areas of reporting on:

- Sustainability attributes;
- Sustainability ratings;
- Building initiatives;
- Owner and tenant objectives; and
- Levels of sustainability implementation.

On average, sustainability reporting has moved from a minimal level of detail being reported in 2011 to a medium level of detail, indicating generalised statements are being made in reports. Building ratings and reporting the sustainability attributes of the buildings have seen the greatest changes in reporting, with much higher levels of ratings reported.

Table 5. Sustainability Reporting levels

Level of detail and discussion	Sustainability attributes in the building		Building Ratings		Sustainability initiatives		Sustainability implementation		Owners Objectives		Tenants Objectives	
	2011	2021	2011	2021	2011	2021	2011	2021	2011	2021	2011	2021
None (1)	19%	4%	35%	17%	45%	15%	39%	15%	45%	35%	58%	35%
Minimal (2)	55%	27%	19%	21%	35%	38%	48%	35%	48%	23%	42%	35%
Medium (3)	23%	62%	42%	58%	13%	35%	10%	42%	0%	35%	0%	23%
High (4)	3%	4%	3%	0%	6%	12%	3%	8%	6%	8%	0%	8%
Very high (5)	0%	4%	0%	4%	0%	0%	0%	0%	0%	0%	0%	0%
Average	2.097	2.769	2.129	2.519	1.806	2.423	1.677	2.154	1.419	2.038	1.774	2.423
St Dev	0.746	0.765	0.957	0.917	0.910	0.902	0.791	1.008	0.502	0.958	0.762	0.857
95% Confidence	0.263	0.189	0.337	0.226	0.320	0.223	0.278	0.249	0.177	0.237	0.268	0.212
t-test (*p-value*)	*0.001*		*0.038*		*0.013*		*0.051*		*0.003*		*0.004*	

If valuers sought to assess sustainability levels of a building, they were asked utilising a 'Check All That Apply' approach to establish how they investigated sustainability of a building, the results across the survey years are displayed in Table 6. This was undertaken across all four surveys. Sustainability ratings *per se* have maintained their prominence and preference for sustainability assessment. Yet these do appear to be lower in comparison to 2015. It would appear in 2021, that rating tools alongside, analysis of building attributes and inspection are considered important sustainability assessment processes. This suggests, that if valuers are placing a higher level of reliance of their own assessment of building attribute analysis (alongside inspection) that their knowledge of sustainability attributes, and likely how they look at inspection should be comprehensive.

Table 6. Sustainability assessment preferences

	Green Star	NABERS	Operating Expenses	Appearance	Analysis of building attributes	Inspection	BEEC	Don't Assess
2007	84%	33%	34%	16%	36%	36%	N/A	N/A
2011	61%	51%	23%	9%	35%	24%	2%	7%
2015	77%	84%	42%	10%	35%	45%	26%	0%
2021	62%	67%	35%	33%	51%	52%	10%	19%

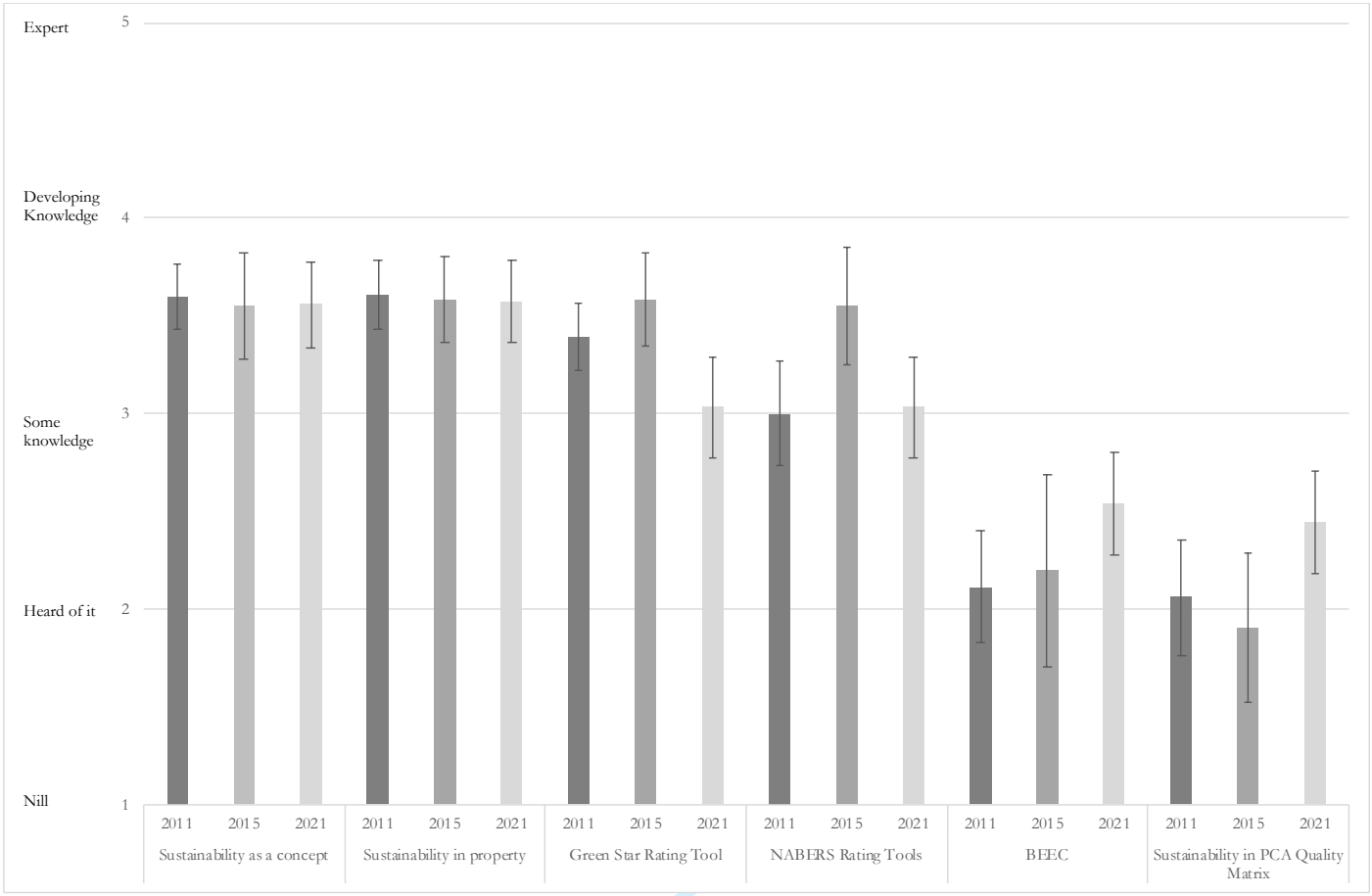
Valuers' knowledge of sustainability

Sustainability assessment, reporting and implications for values have changed considerably over the different waves of the survey from 2007 to 2021. Increases in assessment, depth of reporting and value relationships, particularly with rating tools, are aligning with the market development and number of rated buildings, and research like Newell et al. (2014). Yet, valuers' rating of their own knowledge of sustainability and rating tools, has not seen any significant changes, as seen in Figure 7. Notable changes are the increasing knowledge in 2021

of both the Building Energy Efficiency Certificate (BEEC) and the role of sustainability in the Property Council of Australia (PCA) Quality Grading Matrix (PCA, 2019). Both Green Star and NABERS reduced in the self-assessed knowledge of the tools; this may be a result of the sample of valuers in 2015 (substantially smaller and potential bias as elsewhere discussed), or that ratings have become a broader range (in terms of offering) and as such valuers' are not rating their knowledge as substantial. Alternatively, it may be evidence of a Dunning Kruger effect occurring (Kruger and Dunning, 1999). Where cognitive bias occurs in asking valuers' to rate their knowledge of the rating tools, as their self-rating of their knowledge is more favourable than actual abilities, yet as knowledge increases the self-rating subsequently decreases. Kruger and Dunning (1999) warn of the implications of those who rate their knowledge highly, and the problems this incompetence could lead to. In previous research, Warren-Myers (2013; 2016) identified this high rating of self-knowledge, yet when testing valuers' knowledge on rating tools, poor levels of actual knowledge of the basics of the rating tools was found. Warren-Myers (2013; 2016) warned of valuers' reliance on rating tools, yet they had limited knowledge of them, and the implications this may have in the assessment, comparison and consideration of sustainability and rating tool certification in valuation practice. This may also suggest why Thanh Le and Warren-Myers (2018) found valuers were reluctant to consider sustainability or energy ratings in valuations, as whilst they may have noted their knowledge on the topic generally, their insecurity about their knowledge may be evident in their decision to exclude and reluctance to consider these ratings in valuations.

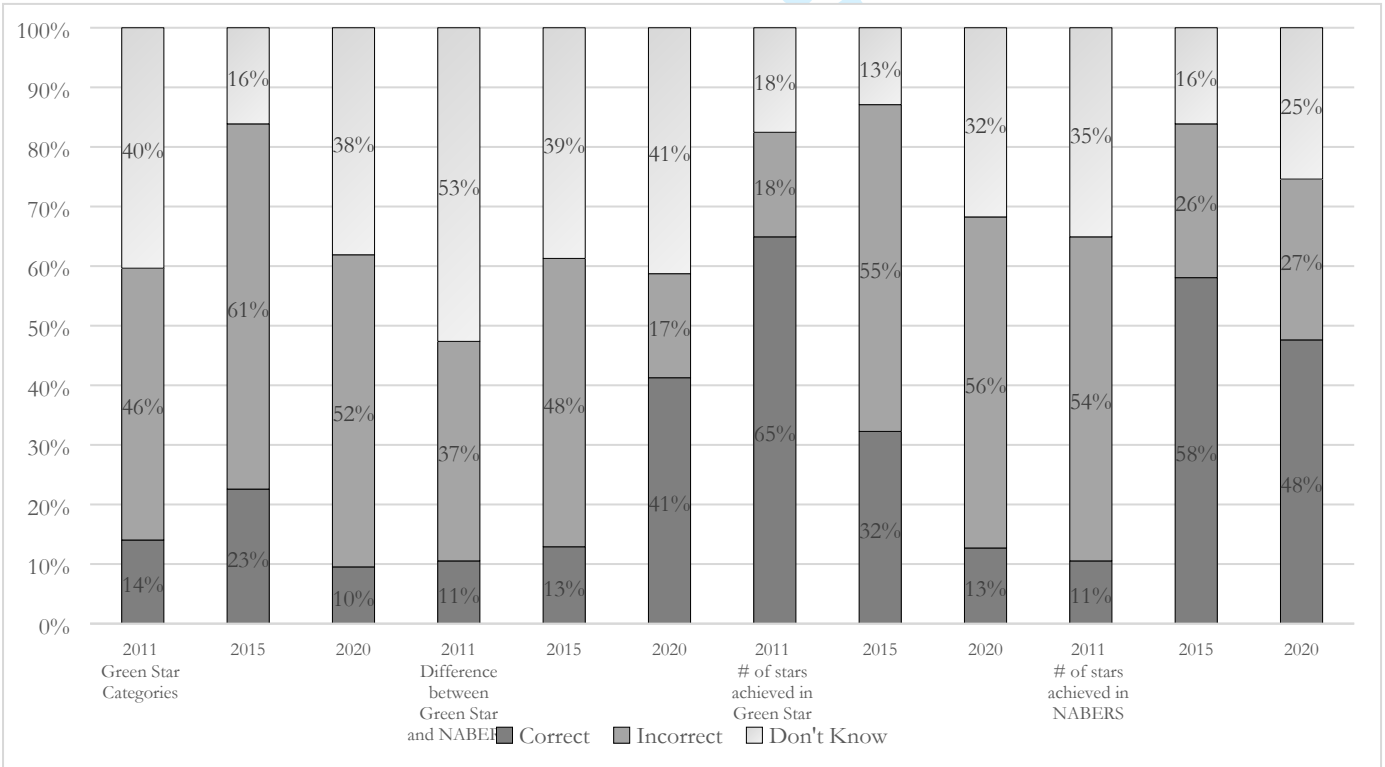
When testing the knowledge of valuers on the rating tools in the 2021 survey round (Figure 9), knowledge of Green Star has reduced since 2011 and NABERS has increased to 48% of valuers identifying correct responses. The most substantial change is valuers' understanding of the differences between the two rating tools, showing a change in correct responses from 13% in 2011, to 41% in 2021. However, it is still very concerning that despite the length of time these tools have been in the market, the prominence particularly of NABERS due to mandatory disclosure, that basic knowledge of these tools (which are used as metrics to assess sustainability and are considered to have an influence on value) is not higher amongst valuers. Particularly, given their responsibilities to their clients and more broadly those who rely on their judgements and assessments; and the ethics and rigor required, as stated in the Australian and New Zealand Property and Valuation Standards for valuers conduct in the process of a valuation and assessments of value. Interestingly, when asked whether they were aware of any guidance, 59% of valuers indicated they did. Of these, information sources cited included RICS Sustainability Guidance note (19%); industry bodies (not API) (19%); rating tool organisations (19%); academic publications (16%); government or statutory sources (11%); API (11%) and the remaining did not comment.

Figure 7. Valuers' assessment of their knowledge about sustainability



Notes: *n* (2011) = 57, *n* (2015)=31, *n* (2021)=63. Error bars show 95% confidence level. 5-point Likert scale was used to rate valuers (own) understanding of…: 1=Nil, 2=Heard of it, 3=Some knowledge, 4=Developing knowledge, 5=Expert

Figure 8 Knowledge test questions on rating tools



Notes: *n* (2011) = 57, *n* (2015)=31, *n* (2021)=63.

The role of legislation and its influence on valuers' knowledge development

The findings of the 2015 survey suggested that perhaps the introduction of mandatory disclosure requirements, resulting in an increased prevalence of NABERS ratings on all advertising material for offices for sale or leased, had influenced valuers' awareness and knowledge of NABERS. As a result the 2021 survey included a series of questions pertaining to their knowledge of the legislation, the requirements and whether it had assisted their knowledge development of NABERS. Of the participants surveyed in 2021, 44% were aware of the mandatory disclosure program, of this subset 82% indicated that the mandatory disclosure program had increased their knowledge of the NABERS program. Interesting of this 44%, only 60% correctly responded to the test questions relating to NABERS. Further valuers indicated that the mandatory disclosure program had changed their valuation practices as shown in Table 7, comprising only responses of those who indicated they were aware of the mandatory disclosure program. The results indicate the introduction of the program had a positive influence on valuers' identifying and reporting of the ratings in valuations. Utilising the rating as a comparative reference quality was considered by just less than half of valuers, whilst 54% did consider the influence of the rating on value. Yet, when asked directly whether the mandatory disclosure program has affected the perceived relationship between energy efficiency and a property's market value, only 22% indicated yes, whilst the majority 70% indicated maybe, and 8% said no. This suggests the mandatory disclosure program and legislation, has played a role in developing market knowledge, reporting and consideration. This also explains aspects of change in perception of the NABERS rating tool and implications for value consideration.

Table 7. Changes in valuation practice due to the mandatory disclosure program

	Identifying the rating	Reporting the rating	Comparing building quality with reference to rating	Considering the ratings influence on value
Yes	54%	54%	46%	54%
Maybe	14%	25%	32%	29%
No	32%	21%	21%	18%

The results of this longitudinal survey of Australian valuers yield some important considerations, and also raises an increasing concern related to the level of knowledge and the current practices of valuers' in consideration of sustainability and sustainability certifications and its effect on values in the assessment of market value. Whilst knowledge in certain aspects has increased marginally over time (assisted by the mandatory disclosure program) there is still widespread misunderstandings and limited knowledge of the basics of the rating tools. Alongside an increase in valuers' perception of certain value relationships with sustainability attributes and certifications, which are increasingly being reported on and are often considered to have a value influence. The research suggests more needs to be done to increase valuers knowledge about the rating, how to identify and verify, conduct comparative analysis and consideration in assessing market values.

8. Practical Implications

This research, which has evaluated the opinions and perceptions of Australian valuers over time, has demonstrated that there is continued evolution of sustainability in the real estate market, and there are clearer suggestions of value relationships between sustainability, values and valuation variables being upheld over years. Sustainability *per se* is having a potentially greater influence on values than seen in previous years, and in particular, sustainability certifications using ratings tools Green Star or NABERS. The rating tools are demonstrating a greater effect on values and when considered by rating level are demonstrating signs of aligning with empirical study by Newell et al. (2014). As with many studies before this, evaluation of knowledge of valuers' regarding sustainability and certification tools regularly used still provides cause for key concern. Particularly, as increases in reporting is occurring and the perceived influence of these on market values is growing. Whilst the legislation introduced in 2010 in Australia for mandatory disclosure has influenced valuers' identification, reporting and consideration of the NABERS energy rating. There remains a concerning

suggestion of the Dunning Kruger effect occurring, where valuers are considering the effect of certifications in the process of valuation, without having a sound knowledge of these certification ratings. This could potentially lead to erroneous valuations, misinterpretation of evidence and poor comparative judgements being made, in the process of assessing market value.

The Australian Property Institute, whilst providing a range of continuing professional development opportunities (webinars that may impart knowledge on sustainability and energy efficiency in property and valuation); there are no guidance notes, information papers or standards that may assist in knowledge development and changes in practice, processes and reporting. At present there would seem to be limited written direction and guidance forthcoming for valuers in Australia. Whilst elsewhere, guidance is being provided, like through the International Valuation Standards Council (IVSC) perspectives paper, the RICS Guidance Notes and Red Book, and the European Valuation Standards (EVS) TEGoVA. In 2016, the TEGoVA included the introduction of technical document EVIP 1 Sustainability and Valuation, and provided greater direction to valuers as to how to consider sustainability and energy efficiency consideration in the valuation process. However, this also notes:

> "*The sustainability movement is now increasingly driven by concern over climate change and so focuses on energy and carbon issues. This bears on all aspects of a firm's business including its property and buildings.*" (EVIP 1, EVS 2016, pg 251).

As noted in Part 1 and in the various guidance to valuers in the IVSC (2021), RICS (2022) and EVS (2016, 2020), it is clear in a global context business sentiment around net zero carbon emission targets for businesses and assets is increasing. Therefore, there will be substantial need for valuers to consider the implication of climate risks, climate resilience, mitigation, and carbon reporting on values, a such guidance and education for valuers is imperative. If further government legislation is introduced, or targets in response to COP26 mitigation objectives are introduced, there will be a requirement to develop guidance and standards similar to those adopted in Europe. In October 2021, the International Valuation Standards Committee released a perspectives paper "*ESG and Real Estate Valuation*", citing the increasing capital flows and corporate decision making will be increasingly aligned with ESG and sustainable economic activities. Suggesting that valuers' consideration of ESG and emissions in the process of a valuation will increase in coming years. Further implications for valuation practice noted in the EVS (2020):

> *"A legal obligation to renovate a building to a higher level of energy efficiency by a fixed date or at a certain inflection point (e.g. rental, sale) creates an unavoidable major cost that impacts Market Value, as the owner at that date or inflection point will have to pay for renovation works.*
>
> *Valuers must be aware of these legal deadlines and inflection points and when they appear, must estimate the cost of a renovation deep enough to meet the required new level of energy efficiency or future requirements that are sufficiently close to coming into force and consider the extent to which these costs affect the Market Value at the date of valuation."* (EVS, 2020, pg.91)

Net Zero commitments, climate risk reporting, and an increasing focus on emissions will likely drive consideration by property actors including owners, investors, and occupiers, as many strive to ensure they will meet their 2030/2050 Net Zero targets. It is probable that in the aftermath of COP26 and the commitments made, that sustainability, in particular emissions considerations, may become a more prominent and imperative evaluation consideration in property valuation.

9. Conclusion

The research presents an understanding over 15 years of the progression of sustainability knowledge development in the valuation profession and the developing understanding of the relationship between sustainability and market value. The longitudinal analysis suggests:

1. Increasing evidence is assisting valuers' in understanding that sustainability certification may influence property values;
2. Limited reporting suggests instructions or standards used are not specifically asking valuers' to consider energy efficiency or sustainability ratings; and
3. Knowledge of sustainability, energy efficiency ratings and considerations are still limited, demonstrating increases in knowledge in some aspects, yet decreasing knowledge of other aspects over time.

Over the 15 years of this project, comprising data collected in 2007, 2011, 2015 and 2021, the number of sustainable rated buildings in Australia has increased substantially, with 78% of office stock NABERS certified (NABERS, 2021b) and 44% of office space (sqm) rated with Green Star (PCA, 2021a, 2021b). As a result, it would be expected the number of market transactions for both sales and leasing have likely evolved in a similar exponential way. Whilst the market needs a new study similar to Newell et al. (2014) study that used 2011 data, a decade on there is increasing need to understand current market dynamics in the Australian context. As demonstrated by the number of empirical studies examining various commercial property markets globally in meta-analyses by Dalton and Fuerst (2016) and Leskinen et al. (2020); the quantum of properties now certified suggest that previously held assertions relating to a lack of evidence, should be diminishing. Although these studies do not necessarily demonstrate depth of data and evidence for individual markets to be useful in the context of valuation practice. It does indicate that the markets, particularly major office markets are demonstrating market evolution. Whilst the market certainly is not yet reaching maturity in the market evolution model referenced in Warren-Myers (2016), the number of buildings and the number of ratings in the market are accelerating. This is leading to greater market and valuer awareness, increasingly clearer connections being made, and evidence of the influence of sustainability, particularly certifications (NABERS and Green Star) on value. However, knowledge levels are still a key barrier to consideration of sustainability in the valuation process. Although improved knowledge relating to the differences between the rating systems over time was established, actual detailed knowledge of the tools and what they mean did not.

The lack of knowledge about sustainability and ability to compare sustainability attributes and certifications plays a substantial role in limiting valuers' consideration of sustainability in valuations. Further research is required to examine the effects of the inclusion made to the European Valuation Standards, RICS Red Book and Guidance Notes, and most recently the perspectives paper from the IVSC and the influence this will have on valuation practice. Further, there is still a pressing need for professional bodies in Australia to review international standards, guidelines and information papers, and translate these so they are relevant for the Australian context, and bring Australian valuers and property professionals into line with international expectations.

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