Sustainability and the valuation of commercial property (Australia)
Purpose of the Paper

This paper aims to expand upon the RICS Valuation Information Paper 13 - (VIP 13) Sustainability and Commercial Property Valuation, detailing some practical issues and steps that are particularly relevant to property markets in Australia.

The purpose of the paper is to provide practical insights for property professionals, valuers, investors, building Owners and their advisers when providing, or receiving, professional advice in connection with the valuation of commercial property (offices). In particular, this paper looks at how sustainability issues can or do affect the value of property. For convenience, when this paper refers to “property”, it will be referring to land and all structural improvements on it.

This is not intended to be an instruction manual, nor a detailed step by step process which must be followed, but rather a indication of the principles which should be considered in a typical valuation process.

This paper has been written for the Australian market, however some of the information may be globally relevant.

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Mark Willers MRICS, CB Richard Ellis
John Goddard FRICS, J Goddard & Co
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Jeremy Marsden MRICS, Knight Frank
Bruce Precious, GPT Group
Bryon Price, AG Coombs
Desmond Spencer MRICS
Davina Rooney, Stockland
Clive Warren FRICS, University of Queensland

Foreword

In order to provide medium and long term returns for investors, commercial property Owners have had to look at the potential future financial risks inherent in holding a portfolio of property relative to the sustainable benchmarks of Tenants, government and the public at large.

As financial institutions, investors and occupiers of commercial property look ever more closely at their carbon footprint, attributing the appropriate financial value to sustainable initiatives is increasingly important.

Having confidence in the professionals undertaking the valuation and the process they follow is of particular importance. This paper describes a professional approach to addressing how the sustainable features of a commercial property, or lack of such features, should be factored into a valuation.

It is hoped that valuers, building Owners and occupiers, investors and their respective advisors will benefit from the professional perspective and objective approach this document provides.

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Introduction

The topic of sustainability and its influence on commercial property valuation has become increasingly important to both property Owners and Tenants, and although some may argue about the extent of any effect on property pricing, it has become an area that needs serious consideration by valuers.

Currently valuers are needing to address the quantum leap that has occurred in the commercial marketplace over the past 2-3 years relating to sustainability. There is now far more information available in the marketplace. The disclosure of Energy Ratings is now mandatory in Australia for commercial premises in excess of 2,000 sq metres, prior to any transaction. Tenants are becoming more sustainability savvy in their requirements.

As Tenants become more informed, and sustainability becomes an increasingly important factor in the decision making of both Landlord and Tenant when committing funds, valuers need to be able to comment specifically on the effect that these issues have on asset pricing. At the present time it can be difficult to separate sustainability from property fundamentals, which is making the reporting process challenging.

It is considered that a “sustainable” building is one that maximises its net income stream over the longest possible time frame, by minimising operational and capital expenditure that would otherwise reduce the income receivable by a property Owner, whilst at the same time creating an environment that will attract and retain Tenants in the marketplace.
If this is the case, a “non-sustainable” building would be considered to be one where net income is heavily discounted due to the need for significant operational and capital expenditure, and the cashflow horizon is relatively short due to the need for future refurbishment or redevelopment.

In the case of a “non-sustainable” building, the valuation impacts are likely to be magnified by softer core yields reflecting inherent risk, and softer terminal yields reflecting increased obsolescence at the end of the cashflow.

From a valuer’s perspective, the risk of litigation due to perceived negligence also increases as sustainability becomes more important in the decision making behind property acquisitions and leasing transactions, should the valuer disregard these impacts in their valuation report.

There has been some debate over recent times as to whether sustainable buildings command a premium over non-sustainable buildings or whether those buildings at the lower end of the sustainability spectrum should be discounted in terms of pricing. This will depend largely on the asset concerned and the ability of the asset to maintain its current Tenant base moving forwards. Either way this issue will need to be addressed by valuers as they assess the impact of sustainability.

For those assets that are affected by changes in sustainable performance, capital expenditure will need to be justified by either an increase in value, or by comparison to a decrease in value that would have occurred if the expenditure had not been committed. As buildings become refurbished and sustainability benchmarks for commercial buildings are raised it is clear that business as usual at major commercial assets will result in a relative decline in the asset when compared to its peers in the marketplace. The benchmarks are constantly changing and this issue will need to be addressed and understood by the valuation profession.

It is difficult to categorically state which assets require consideration from a valuation perspective due to their sustainability credentials. In the Australian marketplace presently the office sector has the largest uptake by far in terms of sustainable ratings as a sector. The effect of these ratings on property value will largely depend on the following characteristics:

- Tenant profile – both in terms of the retention of existing Tenants and attracting new Tenants;
- The physical attributes of the building.

This paper is particularly relevant to practitioners dealing with larger PCA Premium Grade and Grade A and B buildings which tend to attract a Tenant pool that may have rigorous Corporate Social Responsibility (CSR) requirements, both in CBD and suburban market places.

1.2 Structure of the Paper

Section 2 provides an introduction to the techniques employed to measure sustainability in commercial property, in Australia and internationally. In addition, section 2 includes a discussion on the key elements behind the rating tools, their implications for the valuation process and potential future issues relating to the measurement of sustainability.

Section 3 provides narrative from a valuer’s perspective on the impact of sustainability on commercial property cash flow performance and hence valuation.

Section 4 and 5 highlight some of the main items that should be considered when implementing a sustainability upgrade at a major commercial property, and the common issues that can be incurred when implementing such a strategy.

Section 6 includes a ‘valuer’s dozen’ table, intended to offer a high level overview of key refurbishment items, their potential cost, and potential sustainability benefit. This table is intended to provide background information to valuers when conducting inspections.

Section 7 includes three case studies. These highlight Tenant and market requirements in terms of sustainability and are based on real life examples.

Sections 8 and 9 include a summary ‘Valuer’s Prompt Sheet’ and key issues sheet.
How is sustainable performance in commercial property measured?

RICS Valuation Information Paper (VIP) 13: Section 5

Assessing a building’s sustainability characteristics

The perception of what is a sustainable building will change over time and between locations. Additionally, there are varying interpretations of the concept of sustainability: each stakeholder in a building will have a different perception as to what are the critical issues. Buildings are complex structures and every element, from design to construction materials to location, is likely to have an impact on the building’s performance against sustainability criteria. Therefore, it has to be acknowledged that assessing a building’s sustainability characteristics is a complex activity and that it is not a precise science.

One of the areas which has experienced significant change over very recent times is the amount of information available in the market place regarding the sustainability – particularly energy - performance of commercial property. With the introduction, in Australia, of Mandatory Disclosure for the sale, lease or sub-lease of commercial office space in excess of 2,000 sq metres, which commenced on 1 November 2010, it is now compulsory for affected office premises to obtain and display a NABERS Energy rating prior to being advertised for sale or lease.
Large blue chip and government Tenants are increasingly likely to have Corporate Social Responsibility (CSR) policies, which are often set off shore. These can specify minimum standards for the space that these Tenants can occupy and can relate directly to relevant sustainability rating tools at a national level.

In order for valuers to assess Tenant demand for those buildings which attract Tenants affected by sustainability performance, it is necessary for those valuers to understand the rating schemes that exist, what characteristics of a building they relate to and how Tenants are reflecting these as benchmarks in their requirements. In Australia there are currently 2 main sustainability rating schemes, being NABERS and Green Star, but there are other initiatives and documents that provide occupiers with information about the sustainability performance of buildings.

The most widely adopted of the NABERS ratings tools at the time of writing is NABERS Energy for offices, which is described in more detail below.

NABERS Energy for offices can be used to provide the following ratings:
- Tenancy rating;
- Base Building Rating and;
- Whole Building rating.

NABERS Energy Ratings are subject to review annually. Valuers need to have regard to the expiry date of a building rating in order to be certain that a property that would be affected by Commercial Building Disclosure (CBD) requirements is rated at the date of valuation. If a Base Building rating has expired a valuer will need to state that an affected property cannot be transacted without first obtaining a NABERS Energy Rating and complying with the Commercial Building Disclosure requirements.

To carry out a NABERS Energy Rating the following information is required:
- Rated area of office space
- Hours of agreed services
- Energy consumed by central services
- Postcode

The second most prevalent scheme is NABERS Water for offices. NABERS Water for offices rates the intensity of water used in the building for its net lettable area. It is only available as a whole building rating as tenancies proportionately contribute very little to the water use in the building; the main user usually being cooling towers in an air conditioned building.

NABERS Waste for offices measures the amount of ‘materials generated’ (garbage, recyclables, re-use, etc) by a building and how much of that is diverted from landfill/disposal (percentage of total materials generated). The rating is based on a waste audit.

NABERS Indoor Environment for offices allows a comparison of the indoor environment performance of an office to other similar buildings and is the first step in managing the building’s impact on the health and well being of its occupants. The rating measures five factors: Thermal comfort, Air quality, Acoustic comfort, Lighting and Office layout.

In addition to the NABERS tools for rating the energy, water, waste and indoor environment of offices, the NABERS team has developed energy and water rating tools for Homes, Hotels and Shopping Centres.
Defining sustainable buildings

There is no universally agreed definition of a sustainable building. However, as the market evolves and as new metrics and regulations are developed and implemented, so a consensus may emerge. There is a general expectation that buildings that minimise environmental impact through all parts of the building life cycle and focus on improved health for their occupiers may retain value over a longer term than those that do not. Sustainable buildings should optimise utility for their Owners and occupiers and the wider public, whilst minimising the use of natural resources and presenting low environmental impact, including their impact on biodiversity.”

...“ Throughout the globe various measures have been developed that seek to define sustainable buildings in terms of their new build characteristics.”

2.2 Green Star - Australia

Green Star is a voluntary environmental assessment tool launched in 2003 and administered by the Green Building Council of Australia (GBCA). The tool is updated when necessary to take into account new working practices.

The following are the current Green Star ratings tools at the time of writing:
- Green Star – Office v3
- Green Star – Office As Built v2
- Green Star – Office Design v2
- Green Star – Office Interiors v1.1
- Green Star – Retail Centres v1
- Green Star – Multi Unit Residential v1
- Green Star – Industrial v1
- Green Star – Healthcare v1
- Green Star – Education v1

Green Star assesses the future/potential operational environmental impacts of a building, including embodied energy considerations, via nine assessment categories, being:
- management;
- energy;
- water;
- land use/ecoity;
- emissions;
- materials;
- transport;
- indoor environment quality, and;
- innovation.

Ratings are assessed based on specific locational and environmental factors and design stage documentation (‘Design’ rating) or as designed and constructed information (‘As Built’ rating). An official rating can only obtained through the GBCA. A building that has achieved a Green Star rating is awarded a score of between 4 and 6 stars, signifying ‘Best Practice’ (4 Stars), ‘Australian Excellence’ (5 Stars) or ‘World Leadership’ (6 Stars).
The measures of sustainability in property are generally based on:

1. the impact of the building on the environment when being located and built;
2. the impact on the environment when the building is in use; and
3. the impact of the building on its occupants and users when in use.

For more information on how Green Star ratings work see Section 2.7 What’s behind the ratings tools? And Section 2.7.1 How Green Star Ratings Are Achieved.

2.3 Commercial Building Disclosure

Commercial Building Disclosure (CBD) is a national program designed to encourage the improvement of the energy efficiency of Australia’s larger office buildings. The CBD program was developed by the Australian, state and territory governments under the National Strategy on Energy Efficiency; implemented via the Building Energy Efficiency Disclosure Act 2010; and managed by the Australian Government Department of Climate Change and Energy Efficiency.

Under the program, from 1 November 2010 most sellers, lessors or sub-losers of office space of 2,000 square metres or more are required to obtain and disclose an up-to-date energy efficiency rating, although certain exceptions and exemptions apply.

There is a transition period for the first year of the program where a valid NABERS Energy Base Building or Whole Building Rating must be disclosed. From 1 November 2011 a Building Energy Efficiency Certificate (BEEC) will need to be disclosed. BEECs are valid for 12 months, must be publicly accessible on the online Building Energy Efficiency Register, and include:

- a NABERS Energy for offices star rating for the building;
- an assessment of tenancy lighting in the area of the building that is being sold or leased, and;
- general energy efficiency guidance.

The NABERS Energy for offices star rating must also be included in any advertisement for the sale, lease or sublease of the office space.

2.4 The Property Council of Australia’s Guide to Office Building Quality

First produced in May 2006, the PCA Guide to Office Building Quality is used as a benchmark for commercial building quality by valuers and is often referenced in valuation reports. The PCA Guide offers a grading system for existing and new buildings based on their actual design and performance. It sets out physical metrics required by buildings to achieve certain grade levels and requires that buildings ‘overwhelmingly’ comply with the metrics to achieve a particular grade.

The current guide contains minimal specific sustainability standards.

2.5 International Sustainability Rating Schemes

2.5.1 Introduction

International Corporations are increasingly setting minimum space standard requirements at a global level. In order to set a threshold it is likely that these corporations would make reference to NABERS or Green Star ratings in Australia. On a global level there are a small number of other widely recognised rating schemes.

2.5.2 Base Building Rating Schemes

LEED (Leadership in Energy and Environmental Design)

The Leadership in Energy and Environmental Design (LEED) scheme is widely used in the USA. Administered by the United States Green Building Council (USGBC), the scheme offers an approximate equivalent to the Australian Green Star scheme.

BREEAM (The Building Research Establishment Environmental Assessment Method)

The Building Research Establishment Environmental Assessment Method is used to benchmark sustainability performance in the UK and Europe. The scheme combines some of the criteria of the Australian NABERS and Green Star tools.

HK BEAM (Hong Kong Building Environmental Assessment Method)

In Asia sustainability rating schemes were less widely adopted at the time of writing, however those buildings that are rated tend to use either the LEED system or the Honk Kong Building Environmental Assessment Method (HK BEAM).

2.5.3 Tenancy Rating Schemes

SKA Rating

The SKA Rating scheme was developed by Skansen, RICS and AECOM to measure the environmental impact of fit out, to remove the ambiguity prevalent in the fitting out and refurbishment industry. Ska Rating, managed by RICS, helps organisations achieve more sustainable fit outs.
LEED (Leadership in Energy and Environmental Design)

LEED for Commercial Interiors is the benchmark for the Tenant market. It is the recognized system for certifying high-performance green interiors that are healthy, productive places to work. This rating tool enables Tenants and designers to make sustainable choices in buildings where they do not always have control over building operations.

2.6 Future Trends

With the increasing importance with which sustainability in the built environment is now viewed and the speed of change in the sector over the past 3 to 5 years, this section of the paper considers possible future trends and their potential impact on property valuers.

2.6.1 Carbon Efficiency

A large part of sustainable performance has to date been assessed through a building’s operational efficiency. In future it is likely that the cost and value of embodied carbon will be brought into the equation. There is a groundswell in property circles around the world that may in the near future lead to the requirement to include embodied carbon in the total energy calculation for a building.

Carbon efficiency is concerned with the efficiency with which a building uses its embodied carbon. The calculation of carbon efficiency will be based on the carbon embodied or bound into the building during material extraction and manufacture, construction, management, alteration and even demolition and reconstruction of the building. The system can then be used for tracking the carbon through the life of the building and future buildings on that site. This type of Carbon Footprinting is already being used by product manufacturers and retailers.

Valuation is a factor of the market and if at the time of the valuation the market is not including embodied energy, then it will not be factored into the sustainable performance/valuation. When the market takes embodied energy into account it is likely that valuers will start to factor it in as a risk that may influence sentiment and ultimately value.

RICS Research ‘Redefining Zero - Carbon Profiling as a solution to whole life carbon emission measurement in buildings’ (2010), sets out an approach for the measurement of embodied energy in buildings.

2.6.2 Pricing Carbon – How carbon pricing may affect building valuations?

Most of the developed countries in the world are moving to set a price on carbon. It seems likely that this will happen in Australia and this is likely to result in higher building costs and higher running costs, as the cost of carbon becomes priced into the building materials and resources, for less efficient buildings. There may also be implications for increased insurance replacement costs/premiums for the same reasons.

2.6.3 NABERS – Potential Changes

The NABERS team is developing rating tools for public schools in NSW, public hospitals in NSW and a rating tool for commuter transport to encourage the use of more sustainable modes of transport.

2.6.4 Mandatory Disclosure

The future development of mandatory disclosure may lead to the reduction of the minimum 2,000 square metres requirement and/or apply to a wider range of property types, potentially including retail shopping centres, industrial properties and hotels.

2.6.5 Green Star - Potential Changes

The Green Building Council of Australia (GBCA) is developing a new rating tool to evaluate the environmental impacts of operational buildings. ‘Green Star Performance’ will allow building managers to assess the environmental impacts of their existing buildings using a wide range of criteria. As with the Green Star rating tools developed to assess the environmental impacts of buildings at the ‘Design and As Built’ stages, ‘Green Star Performance’ will include credits assembled under nine separate categories.

Green Star Performance’s key objective is to provide a holistic sustainability rating system for existing buildings in Australia and will aim to:

- allow buildings that do not currently have a Green Star rating to assess their sustainability performance; and
- allow stakeholders to compare Green Star designed buildings with non-Green Star designed buildings in operation, providing better understanding of holistic sustainability performance in the market.

GBCA is in the process of reviewing the existing Design rating tool and are considering implementing a sunset date whereby design ratings will fade and be replaced with an ‘As-Built’ rating. This could be significant to developers who have secured pre-lease or pre-sale agreements over buildings under construction based on a design rating if the subsequent ‘As-built’ rating is of a lesser standard.

2.7 What’s behind the Australian ratings tools?

Under NABERS, a tenancy, base building or whole building can be rated on a scale of one to six, with one star representing the most intensive buildings and five stars representing the least intensive. However, a Green Star rating is achieved through acquiring credit points based on the building’s design, location, material selection, proposed management systems and the management of the construction process that was used to build or refurbish it.

Although the basis of NABERS is relatively simple, Green Star is much more complex and ratings can be obtained and based on various different point scoring criteria. The make up of Green Star ratings is worthy of further consideration.

2.7.1 How Green Star Ratings Are Achieved

To quote from the GBCA (Green Star Office v3 2008) Green Star rating tools include nine separate environmental impact categories, see section 2.2.

The categories are divided into credits, each of which addresses an initiative that improves or has the potential to improve a design, project or building’s environmental performance. Points are awarded in each credit for actions that demonstrate that the project has met the overall objectives of Green Star and the specific aims of the Green Star.

Once all credits in each category are assessed, a percentage score for the category is calculated. A Green Star environmental weighting factor is then applied to each of the project’s category scores to reach a single score. Green Star environmental weighting factors vary across states/territories to reflect differing environmental concerns and imperatives across the Australian continent. By applying a weighting to each Category Score, Green Star ensures that each category is appropriately represented within the rating tool, in line with current knowledge and GBCA opinion.

To encourage the development and spread of innovative technologies, designs and processes that could improve buildings’ environmental performance, an ‘Innovation’ category is included in each Green Star rating tool. The ‘Innovation’ category is not subject to an environmental weighting factor as the innovation could fall under any number of Green Star categories.

A Category Score is determined based on the percentage of credit points achieved. A Weighted Category is then calculated. A single (ie. overall) score is determined by adding together all the Weighted Category Scores plus the Innovation points. The maximum possible score for the weighted categories is 100, with an additional 5 points available for innovation. Refer to Appendix 4 for Category Score Table.

2.7.2 Green Star Design and Green Star As-Built

Green Star is essentially a two stage process:

- Design - Validation of the Design
- As-Built - Validation that the environmental initiatives have been followed through the construction process.

A design rating shows the intention of the design to meet the standards set by Green Star, it does not mean that the building has been constructed to Green Star standards. The Green Star ‘As-Built’ rating demonstrates that the design and construction team has shown that the building has been constructed to Green Star standards, and is in line with their design brief. The proposed changes to Green Star Design Ratings are highlighted in Section 2.6.5.
How should valuers use this information to assess performance?

All buildings are different and all buildings that have achieved a Green Star rating will have achieved their rating in a unique way.

To achieve the highest ratings a significant number of points are needed in each category and the amount of choice for performance in particular categories disappears, in other words the building has to perform well in all categories. However in the lower categories a high level of compliance is not required in all categories and therefore a rating may be achieved where the building only performs to a moderate level in one category but possibly high in others.

The fact that the building has achieved a rating, does not mean that it performs to high standards of sustainability across all categories, and this can be misleading. Valuers may need to consider whether the levels of performance achieved are in the areas that the market will consider important, which may then influence market demand and pricing.
In further explanation, some of the criteria a Tenant or purchaser might see as being an absolute prerequisite for a Green Building, eg. very high standards of Indoor Environmental Quality (IEQ), may not have been achieved, but the building has achieved a rating due to, say, a very high level of energy performance. Obtaining a copy of the Green Star credit points calculation would normally provide this information.

The valuer needs to be alert to systems in the building that would have contributed to the building achieving its rating, but have been decommissioned, turned off or no longer used once the building was completed and the rating awarded. At the time of writing this document green ratings are achieved at a snapshot in time and don’t allow ongoing assessment or change over time. GBCA are working on introducing a performance based tool. Refer to section 2.6 Future Trends.

It should be noted that it is not enough for a valuer to simply rely on a NABERS or Green Star rating to assess the sustainability performance of a building without first having an understanding of the schemes and the point scoring behind them.

### Key Issues:

1. Valuers should understand existing sustainability rating schemes, the requirements behind the schemes, the difference between the ratings and the different credit point ratings in Green Star and the way the credit points are awarded to achieve the overall score.

2. Valuers need to understand the requirements of Commercial Building Disclosure and be able to advise clients accordingly, particularly when assessing a likely selling period.

3. Major corporate Tenants often have Corporate Social Responsibility (CSR) requirements and these need to be understood by valuers. These can be set offshore and can include minimum threshold sustainability requirements.

4. Sustainability in the built environment will likely continue to become more mainstream in the future. It is likely that more Tenants will require sustainability initiatives and ratings, and other building types will be affected.

5. Valuers will need to understand the influence of emissions, resource usage and embodied energy on asset values as carbon becomes priced into the economy.
4.1 Introduction

In order to assess a building’s sustainable credentials relative to its peers, valuers need to be informed as to the physical and non-physical attributes of a building that affect its sustainability. Valuers need to be able to establish where a building falls short and how, and at what cost, the sustainable performance can be improved.

This is a fast moving area and valuers should expect to seek expert third party advice. It should be noted that all buildings are different and that while needing to be aware of the technology and systems that affect sustainability, valuers cannot be expected to be up to date with the latest technical knowledge.

4.2 Assessing Sustainability Performance in Commercial Buildings

When trying to assess the sustainability performance of buildings there are three broad ways of looking at the building.

- First: Is it energy efficient when compared to market standards? A NABERS rating is a reasonable but not complete indicator of this.
- Second: Is it energy efficient with respect to its technical potential, i.e. it is generally as good as it can be within its current design limitations.
- Thirdly: Does it possess good ‘green bones’? In other words, can it achieve a good standard of sustainability cost effectively without significant interruption of its income flow?
To assess the standard of sustainability the valuer would need to review the building from two aspects:

- The physical attributes of the building (Hard Assets); and
- The non-physical attributes of the building (Soft Assets).

Factors affecting the ability of the building to optimise its NABERS rating include:

- For a mixed use building (eg. containing retail) the ‘ease’ that the energy consuming services can be separated to facilitate an optimal rating for the office space.
- NLA/GLA ratio, large ‘public’ spaces / foyers that are lit and air conditioned / ventilated will reduce the NABERS rating.
- Does the building have a car park and will this affect its NABERS Rating?
- Does the building have other features that will negatively impact its NABERS rating; retail areas, 24/7 public areas, vacancies?
- Are Tenant Condenser Water Systems and other Tenant cooling systems (plant and reticulation) clearly separated from base building systems for NABERS rating purposes?

Included below is commentary on major Hard and Soft Assets that may need to be considered by valuers.

### 4.3 Hard Assets - Assessment

This is a highly technical area, Valuers may need to obtain assistance from technical advisers appropriately experienced in sustainability matters. Some key Hard Assets include;

**Metering** - if you do not monitor, you cannot manage.
- Is there an energy efficiency sub metering system in place and is there reliable energy consumption information?
- Is the metering system operational and accurate?

**Lighting** - Base Building
This has a direct impact on the Base Building energy rating.
- Has an energy efficiency lighting upgrade been carried out?
- What is the type or extent of upgrades; lamps, fittings, controls?
- To what proportion of the buildings tenancies?

**Lighting** – Tenancies
Tenancy lighting has an indirect impact on Base Building rating. This is through the lower heat output of lights reducing energy for cooling (a double win). It is usually seen by ‘sustainability aware’ Tenants as being an integral part of a Green building.

Tenancy lighting consumes about 45 to 50% of the energy consumed in a typical office and therefore has a major impact on the Tenant’s consumption and cost of energy. Modern office lighting systems can use 20 to 40% less than the older systems, while producing the same or slightly higher lighting levels.

There is extensive ongoing research and development into lighting presently. Some of the new systems such as LED, E1 and organic LED technologies are already available, with others being developed that will make current office lights obsolete.

### Central Plant and Water Distribution

The energy used will have a direct impact on the Base Building energy rating. However, the cost of new chillers is high and the return medium to low, meaning that it is generally not economic to change chillers that are not reaching the end of their economic life, however the return and impact on energy rating could cause their replacement to be brought forward. Variable Speed Drives (VSDs) are generally medium cost items with good returns.

#### Key Issues:

1. Age and condition of chillers, cooling towers and boilers, and associated pumping, coefficient of performance compared with modern variants.
2. Have energy efficient replacement or system modifications been carried out?
3. Type or extent of upgrades; Capital plant (chillers, boilers), Variable Speed Drives and associated controls, motors, pumps, cooling towers, central plant controls and control strategies.
4. Sizing of the central plant, is it adequately sized to enable it to run at optimal duty?

### Air Handling and Distribution

Variable Speed Drives are generally of medium cost with good returns. Inefficiencies such as conflicts from heating previously cooled air are doubly energy inefficient.

#### Key Issues:

1. Have energy efficiency upgrades been carried out?
2. Type or extent of upgrades; fans, motors, variable speed drives and associated controls, rebalancing or recommissioning, controls upgrades and controls strategies.
3. Flexibility, does the HVAC, lighting and general power systems design support reasonable tenancy churn demands without the need to modify ability to reconfigure floor layouts, adequate and flexible access to outside air etc?
4. Adaptability, when HVAC, lighting and general power systems require modifications to support changes in tenancy requirements are they readily modified or do they require substantial change?
Water Usage
Water usage is generally a base building matter, cooling towers are major contributors to water use.

**Key Issues:**
1. Does the building have cooling towers, are these metered?
2. Have water efficiency upgrades been carried out?
3. What are the type or extent of upgrades; toilets, cooling tower, metering of fire systems, and other water efficiency initiatives ie black water/grey water systems?

Building Management and Control System (BMCS)
The Building Management and Control System controls, reports, fine tunes, sounds alarms, and monitors the building’s systems. As with all technology there have been rapid improvements in recent times, older systems cannot be expected to perform as well as the latest systems. Sometimes older equipment can be upgraded, but generally if the system is more than two to five years old it can be improved upon.

**Key Issues:**
1. What age is the system? This should be considered as these technologies have a life cycle. Does it have energy management functionality including monitoring, diagnostics, control / tuning and reporting / alarming? Can the data it generates be used to assist in NABERS assessment?

Facade / Structure
The facade is a source of heat gain into the building. Thermally inefficient facades include those with single glazed or non-performance/solar control type, curtain wall systems with floor to ceiling glazing, facade framing that is continuous from the exterior to the interior and therefore transfers heat in.

Thermally efficient facades control the temperature and the perceived temperature of the occupants of the building, they will help people sitting in sunshine not to feel as hot as with a less efficient facade. Solar control blinds may be required to avoid solar gain, they can also reduce glare, making working by a window a more pleasant experience.

It should be noted however, that some buildings will increase their demand for heating in winter after a thermal upgrade as the solar gain will be lost as a source of heat.

Orientation and overshadowing will have a large impact on the effect of the facade on the building’s energy performance.

**Key Issues:**
1. Have energy efficiency upgrades been carried out?
2. What is the type or extent of upgrades; sun shading, air tightness, insulation, glazing replacement or improvement, entry air locks?

Car parks
Open car parks that do not need ventilation do not waste energy on running fans. Fans for ventilated car parks should be controlled by the levels of carbon monoxide in the car park, rather than running continuously.

Lighting systems should not run all the time, they should be on movement sensors.

**Key Issues:**
1. Are the ventilation and lighting systems optimised for energy efficiency?

Waste Management
Waste impact needs to be reduced at source, separated into waste to land fill, waste that can be recycled or waste that can be composted. Waste, such as metals and paper can have value. Buildings need space to handle waste for maximum efficiency. For carbon neutral or carbon aware Tenants the more efficient their waste is handled, the lower their carbon offsetting costs.

**Key Issues:**
1. Are there facilities in place to support recycling ie adequate space provision at docks etc?
2. Does building management have effective waste management plans to minimize waste to land fill?
4.4 Soft Asset Assessment

Issues to be considered in order to establish the extent of Soft Assets that would affect the sustainability performance of the building include:

• Is there a history of sustainability consciousness in the building, including energy efficiency and water efficiency?
• Is there an energy efficiency and/or water reporting process in place?
• Has the building been managed and maintained to optimise energy efficiency?
• Have the building services in general been well maintained?
• Have any recent modifications to the building services been carried out professionally?
• Are the building services well documented, are the ‘as installed’ drawings up to date, accurate and complete for the central plant and the tenancy areas?
• Is there a ‘base building engineering’ quality control process that reviews and approves tenancy changes?
• Are there Green Leases in place or leases that have some energy efficiency related aspect, is there any Tenant alignment on energy efficiency?
• Are there tenancy guidelines for fit outs that relate to energy efficiency, water efficiency, material selection, waste management, or other sustainability related items?
• Are environmentally friendly cleaning materials or pesticides used?
• Is the air quality monitored regularly? If so, how often? For example 6 monthly, 12 monthly.

Indoor Health
Indoor health is of paramount importance to many major Tenants as they do not want to be committed to occupying a building on a long lease when the internal environment is unhealthy.

Cleaning should be to a high standard to remove particulates. Also harmful chemicals should not be introduced for cleaning or pest treatment as these can affect the indoor health of the building.

Air conditioning should be maintained to high standards, with filters changed regularly and records kept so that Tenants can inspect them.

Building Management Document
Assisting Tenants Achieve a Green Star Interiors Rating
There are initiatives that can be included in management documents to attract Tenants that want to achieve a Green Star - Office Interiors rating under their Tool v1.1. Some of the best and easiest ways to achieve an interior rating are achieved by the Landlord demonstrating commitment to manage the building to good environmental standards.

For instance, Eco-3 of the Green Star Tool requires the Landlord to set certain management standards in their building, these include:

• Energy monitoring;
• Waste reduction;
• Water monitoring;
• Regular maintenance of Heating, Ventilation & Air Conditioning & Refrigeration systems (HVAC&R);
• Use of low environmental impact cleaning materials;
• Future procurement of low environmental impact consumables.

The Tenant may achieve up to 3 unweighted credit points for going to a building where the Landlord has committed to these requirements.

Eco-4 of the Green Star Tool awards points to the Tenant if they set up similar initiatives, with the exception of the regular maintenance of Heating, Ventilation & Air Conditioning & Refrigeration (HVAC&R) systems. The Tenant may then achieve up to a further 3 unweighted credit points.

These are relatively simple points to achieve, but they require cooperation between the Landlord and Tenant, as in fact do many things if the building and tenancies are to optimise their sustainable performance.

Some examples of areas where the Landlord can upgrade the building and possibly help the Tenant gain points towards their Green Star Office Interiors rating include:

<table>
<thead>
<tr>
<th>Green Star Credit Category</th>
<th>Explanation</th>
<th>Credit Points potentially available for the Tenant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Man-4</td>
<td>Tenant Guide</td>
<td>3</td>
</tr>
<tr>
<td>leq-5</td>
<td>High Frequency Ballasts</td>
<td>2</td>
</tr>
<tr>
<td>leq-6</td>
<td>Electric Lighting Levels</td>
<td>2</td>
</tr>
<tr>
<td>leq-11</td>
<td>Volatile Organic Compounds</td>
<td>8</td>
</tr>
<tr>
<td>leq-13</td>
<td>Air Supply Ductwork</td>
<td>1</td>
</tr>
<tr>
<td>Ene-3</td>
<td>Electrical Sub-metering</td>
<td>2</td>
</tr>
<tr>
<td>Ene-4</td>
<td>Office Lighting Zoning</td>
<td>2</td>
</tr>
<tr>
<td>Tra-1</td>
<td>Public Transport</td>
<td>5</td>
</tr>
<tr>
<td>Tra-3</td>
<td>Cyclist facilities</td>
<td>3</td>
</tr>
<tr>
<td>Eco-1</td>
<td>Green Star Office As Built Certified Building</td>
<td>6</td>
</tr>
<tr>
<td>Eco-3</td>
<td>Building Environmental Management</td>
<td>3</td>
</tr>
<tr>
<td>Eco-4</td>
<td>Commitment to Building Performance</td>
<td>3</td>
</tr>
</tbody>
</table>

It should be noted that points achieved will be based on both Landlord and Tenant combined initiatives and often the current best practice for carrying out work will actually meet the required standards of Green Star.

Performance / Rating History
Historic NABERS ratings can inform a valuer as to how a building has performed historically. This information overlaid with historic capital expenditure data can help give insight into previous improvements and the scope of potential future improvements.
Sustainability and commercial property valuation

5.1 Introduction to Valuation Methodology

Green buildings are perceived to be more attractive to occupy from a Tenant’s point of view. The features that make them so are often physical characteristics such as better natural light, improved efficiencies, good indoor environment quality, new or improved plant and services. A number of highly rated Green buildings have been through a significant period of capital expenditure and improvements in order to obtain green ratings. These characteristics would command more rent in the marketplace from Tenants, green ratings aside, and valuers face an inherent difficulty in differentiating between green ratings and a building’s physical improvements.

The challenge for a valuer therefore is to comment specifically, where necessary, on the positive and negative attributes of a building’s sustainability ratings, explicitly from the normal comparison and benchmarking process with other buildings in the marketplace based on their physical condition, PCA grading (A Guide to Office Building Quality, PCA), location, aspect and age.
Rather than considering that all Green buildings will obtain a yield improvement or that all non-green buildings will be assessed to have a yield penalty, it is the case that the green credentials of a particular building will have a much more individual effect on the pricing and demand for that asset going forwards, and that any premium or reduction in pricing will depend entirely on the individual property’s characteristics, market demand and buyer sentiment. In other words the effect of sustainability on property value is likely to be very asset specific.

Property valuation reports need to clearly reflect the valuers underlying assumptions in their assessment of value. It could be argued that a number of valuation report templates for larger commercial assets, be they CBD or suburban, have not kept pace with the extent of change that has occurred over the previous few years in terms of sustainable improvements. Clearer and more explicit reporting by valuers would help to bridge the gap between what property Owners see to be a disconnect between green property improvements and related expenditure, and valuation assessments.

This section is laid out in the order of a typical valuation assignment.

### 5.2 Instruction/Information request

Valuers should be mindful of the characteristics of the property which they have been instructed to value prior to inspecting and issuing an information request. In particular a valuer should research the size of the property, whether the property includes a significant retail/food court component, major Tenant profile, and consider the major building competitors in the market. If it is identified that a particular property is likely to compete with properties that have high sustainability credentials, or the major Tenants are likely to require a minimum standard of sustainability rating by way of a Corporate Social Responsibility policy, the valuer should approach an inspection and information request with this in mind.

Prior to issuing an information request a valuer is able to determine the current status of ratings using the relevant sources, namely:

- Current NABERS Ratings (Energy, Water, Waste, IEQ) and their expiry date;
- Current Green Star Rating.

One of the key issues for a valuer to establish when valuing a property that may be price affected by sustainability will be the extent of works undertaken as at the date of valuation to improve the property from a sustainability perspective, the nature and extent of planned works and the scope for future works. For this reason it may be important for the valuer to request a break down of capital expenditure spent over the last 2-3 years on sustainability improvements, planned capital expenditure and any relevant consultancy reports on building performance and potential improvements. Valuers may consider requesting:

- Capex reports;
- A breakdown of major Tenant types and Corporate Social Responsibility requirements (if known);
- If the building is Green Star rated the valuer should ask for the Green Star points calculations.

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RICS Valuation Information Paper (VIP) 13: Section 5

Assessing a building’s sustainability characteristics - collecting evidence: inspection and other investigations

“... valuers should be satisfied that they are in possession of sufficient information, either through their own due diligence and verification or through having been provided with information upon which they may rely, to enable them to make informed judgments and properly advise the client.”
5.3 Inspection

When inspecting the property the valuer should gauge the property Owner's strategy for energy efficiency and sustainability and review the scope of existing works and potential for future works. Only by doing so can the valuer compare the subject property relative to its peers in the market place.

At inspection it may be appropriate to consider asking the following questions:

- Is retail or communications space separately metered for energy supply and services?
- Is there a history of energy and water efficiency consciousness and reporting in the building?
- Is there a history of NABERS Ratings at the building?
- Is there a history of a broader sustainability consciousness in the building?
- Is the building being managed and maintained to optimise energy efficiency?
- Have the building services in general been well maintained?
- Have any recent modifications to the building services been carried out professionally?
- Are there Green Leases in place or leases that have some energy efficiency related aspect?
- If so, are necessary improvements being carried out and maintained?
- Are there tenancy guidelines for fit outs that relate to energy efficiency, and or water efficiency and or material selection and or waste management and or other sustainability related items?

In appendix 2 and 3 ‘A Valuers Dozen’ summary sheet and a ‘Valuers Prompt List’ are included and may assist when conducting a valuation of major commercial assets. These lists introduce some of the key themes for consideration during the pre-inspection, inspection and reporting phases of the valuation.

5.4 Research

When conducting market research for the valuation of an asset that may be price affected by sustainability it will be necessary for a valuer to consider the green/ Sustainability ratings of a comparable property and the impact that these have had on capital transactions, capital pricing and leasing.

Valuers should also consider the age of comparable evidence and the scope of sustainability improvements at the time of sale or lease, along with the potential for improvement and whether the buyer was motivated to purchase the property due to its existing sustainability improvements or potential for future upgrades. Where possible a valuer should obtain information on the extent of capital expenditure at comparable properties, and whether a purchaser factored a specific allowance for sustainability upgrades into a purchase price.

Valuers may also seek to establish the Tenant profile of comparable buildings, both in terms of existing Tenants and target Tenants for existing and future vacant space, in order to establish whether the comparable property is likely to be price (rental and capital value) affected by sustainability. This should be coupled with an understanding of investor profile and the extent to which a purchaser or vendor has been driven by green issues.

5.5 Valuation Methodology

When valuing major commercial assets that may be price affected by sustainability, areas for particular consideration are:

**Rental Growth** – higher green rated buildings may out perform lower green rated buildings in the future as the pool of Tenants with substantial Corporate Social Responsibility/Sustainability requirements grows and the pool of commercial building stock undergoes refurbishment and repositioning.
Renewal Probability –
it is widely regarded that sustainable buildings provide a superior working environment to non-sustainable buildings and as such existing Tenants may be more attracted to stay in highly rated green buildings. As the pool of major companies with specific requirements in terms of sustainability and energy efficiency grows, valuers should specifically be alert to major Tenant expiries in the cash flow and the potential sustainability rating of the property at that time when applying a renewal probability.

Terminal Yield –
green design, and Tenant requirements for sustainability ratings and green initiatives, has become more commonplace over the past few years. As this trend continues there is the potential for some large commercial assets to become obsolete more quickly, as their traditional Tenant pool is attracted to new or improved buildings.

Capital Expenditure –
over time, an increasing number of buildings will be newly constructed or retro-fitted to include sustainable design. As a result, capital expenditure will be required in order for a property to keep pace with its peers in the wider marketplace.

Lease up Period –
as the pool of Tenants in the marketplace with substantial Corporate Social Responsibility requirements increases it may be the case that highly rated Green buildings become more attractive to these Tenants and lower rated buildings become less so. As a result, it may become increasingly difficult to find major blue chip Tenants willing to lease space in lower green rated buildings in the future.

Outgoings –
sustainable buildings normally use fewer resources and as a result will require less expenditure on air-conditioning, electricity, water etc. At the top end of the green spectrum this may be offset somewhat by increased management costs associated with running complex plant and machinery.

Core Yields -
higher green rated buildings tend to be newer, better quality prime buildings and as such tend to trade at the lower end of the yield spectrum. If significant capital funds have been committed this would likely decrease the future risk profile of the property, assuming that funds have been committed in a targeted manner.

In considering the effect of sustainability on the valuation of a particular asset it will be necessary for a valuer to consider the ability of that asset to maintain (or improve) its net income stream over the course of the cash flow horizon. In the valuation of the majority of large commercial assets a valuer will be assessing market value based on a Discounted Cash Flow (DCF) and Capitalisation Approach. A Discounted Cash Flow allows explicit income and expenditure modelling throughout the cashflow horizon (normally 10 years) and as such can more easily accommodate Tenant expiry and associated leaseup, expenditure allowances and market rent during that period.

It is normal market practice to bring 1-3 years worth of capital allowances into the Capitalisation Approach. For those buildings with major Tenant expiries past the 3 year horizon it is very difficult to accurately assess the impact of these expiries on the Capitalisation Approach and a valuer may need to consider an adjustment in core yield (Capitalisation Rate) for those buildings heavily affected by sustainability in order that the future cash flow risk is more accurately reflected in the capitalisation approach.

In this case it would be necessary for a valuer to make comment that the Discounted Cash Flow is the primary method of valuation and the Capitalisation Approach has been adjusted accordingly. At the current time there may be insufficient conclusive sales evidence to justify the adjusted Capitalisation Rate. In this case the valuer would need to comment accordingly.

5.6 Reporting

A valuation report should be tailored to the asset being valued and the extent of wording and commentary relating to sustainability and its impact on the valuation will vary depending on the asset being valued. Some of the main areas for consideration include:

- Executive Summary – inclusion of building ratings;
- Major Tenant profile - indication of known Corporate Social Responsibility requirements;
- SWOT/Risk assessment – inclusion of comments as necessary;
- Capital Expenditure – inclusion of a clear summary of spent and committed capital expenditure and consideration of the scope for further improvement;
- Valuation Rationale – explanation of the impact of sustainability on valuation parameters, cash flow assumptions, assessed market rents and core yields;
- Comparable analyses – wherever appropriate, the green credentials of comparable properties should be considered and stated.
5.7 Green Leases

Green Leases are a mechanism allowing property Owners and Tenants to formalise requirements relating to future building performance in terms of sustainability. Green Leases can be considered as either light, mid or dark green, depending on the extent of actions required by either party and the penalty for non-compliance.

Light green leases generally include a stated target or strategy on behalf of either the Tenant or Landlord to meet a certain sustainability goal. This might be vague and merely introduce a topic to a lease. Mid green leases are more focussed and more specific in their requirements. A mid green lease might include a stated goal in terms of, for example, energy efficiency or NABERS Energy Rating and include a specified timescale to meet this goal. A dark green lease would be even more specific and would likely include a penalty for non-compliance with a specified goal or target on either the Landlord or Tenant.

Valuers need to be mindful of green lease clauses and consider whether the property Owner/manager’s strategy at the property is sufficient to comply with the requirements of the clause, particularly where a dark green lease is in place.

For more information on Green Leases please refer to the RICS Oceania Guide to Environmental Performance Clauses, Australia.

Key Issues:

1. Valuers need to tailor their information requests for large commercial assets based on their characteristics.

2. At inspection a valuer should gain an understanding of the property Owner’s strategy in relation to sustainability, capital works completed and committed to improve sustainability and the scope of potential works in the future.

3. Where major Tenants have known CSR requirements valuers should confirm that the property will meet those requirements at lease expiry. This will need to be reflected in renewal probabilities.

4. Where Tenant leases include green lease clauses valuers will need to be mindful that property Owners and Tenants are meeting the requirements of the clauses.

5. Valuation reports should clearly show the impact of sustainability ratings, requirements and capital works on property valuation, both at the date of valuation and, as appropriate, throughout the projected cash flow.
6.1 Age of Building Stock

One of the key areas for consideration in a refurbishment strategy will be the economic life of the major building plant and equipment and the position on the economic timeline of the asset at the time of refurbishment. It is often possible to gain significant ground in terms of energy efficiency in poorly rated commercial assets without the need for major capital expenditure. This can be achieved by replacing relatively inexpensive items such as common area lighting, installing sub-metering and upgrading BMCS software and fine tuning and careful management of the operation of HVAC plant.
However, when it comes to the top end of the green spectrum, say 3.5 Stars NABERS Energy and above, it becomes increasingly difficult to gain extra efficiencies. At some point it may become necessary to consider the replacement of major plant and equipment items, such as chillers, cooling towers etc.

If a major refurbishment of an asset were carried out, say, 10 years ago, it would be very difficult to warrant replacement of plant and equipment given that they probably have a useful remaining economic life in the order of 15 years. However, for a large number of commercial buildings in Australia CBD’s, plant and equipment will be coming to the end of its economic life, being as old as the building itself which may date to the 1980s. In these instances there may be scope to carry out an integrated upgrade throughout the building which can give rise to large efficiencies.

Offices generally need to be refurbished every 20 – 25 years (Jones Lang LaSalle 2005). The Nations average building is now in its refurbishment phase (ARUP/Property Council) (See table 1 below).

<table>
<thead>
<tr>
<th>Market</th>
<th>Avg. Age since construction</th>
<th>Avg. Age since construction or last refurbishment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sydney CBD</td>
<td>28</td>
<td>19</td>
</tr>
<tr>
<td>Melbourne CBD</td>
<td>31</td>
<td>17</td>
</tr>
<tr>
<td>Brisbane CBD</td>
<td>25</td>
<td>13</td>
</tr>
<tr>
<td>Adelaide CBD</td>
<td>31</td>
<td>19</td>
</tr>
</tbody>
</table>

6.2 Existing Buildings Retro-fit: Cost Benefit Analysis

When valuing major commercial assets it is necessary for a valuer to gauge to what extent sustainability and sustainability ratings may affect the net income stream of a particular property in the future. This will likely be a function of Tenant, both sitting and market, requirements. For those properties with poor sustainability credentials, that are deemed to target Tenants with extensive Corporate Social Responsibility (CSR) policies, it will be necessary for a valuer to determine the likely cost of improving the property’s energy efficiency, versus the potential cost of not improving the property in terms of market rent, vacancy allowances, Tenant incentives and obsolescence.

Depending on the age of the property, its physical configuration and the extent of works already undertaken by the property Owner, there are often significant gains that can be achieved for relatively little expenditure. Items such as common area lighting upgrades, BMCS system upgrades, fine tuning and careful management of the operation of HVAC plant, Car Park CO2 monitoring, sub-metering etc can be initiated relatively economically and can have a large impact on NABERS Energy Ratings. It has been said that a building supervisor can impact a building’s NABERS Energy Rating by as much as 1 to 1.5 Stars.

However, it can be much harder, and much more expensive, to increase energy efficiency at the top end of the green spectrum (above 3.5 to 4 Stars NABERS Energy). In those instances where a valuer is required to value a commercial asset with a significant exposure to government Tenants, or large blue chip Tenants with Corporate Social Responsibility policies requiring a minimum NABERS Energy Rating of 4.5 Stars, it will be necessary for a valuer to gauge the likely cost of refurbishment in order to reposition the asset to this level and retain and attract Tenants.

The PCA/ARUP/Davis Langdon Guides ‘Existing Buildings/Survival Strategies, (2008) and (2009)’ list in
detail the initiatives which building Owners can take to enhance the sustainability of their buildings. They also include a summary guide to the cost implications and impact and benefit of various initiatives.

A valuer will not have the expertise or capacity to analyse every one of these issues nor should they need to. However, for those assets deemed to be price affected by sustainability (those where Tenants require a threshold standard of energy efficiency for example), an assessment of the cost of capital works required to obtain and maintain a green rating will be critical to the valuation. This will need to be compared to the likely benefit of obtaining the rating, or the likely penalty of not obtaining the rating (in terms of Tenant retention and attraction, energy efficiency, obsolescence etc) in order to justify the capital outlay and the valuation parameters.

**Key Issues:**

1. Valuers should be mindful of the age of building plant and equipment and its remaining economic life.

2. Where plant and equipment is reaching the end of its economic life a valuer will need to assess, or be provided with consultancy reports to address, the implications of sustainability focussed upgrade.

3. Valuers need to be mindful of other buildings in the market place that compete with the properties that they are valuing, and the scope of improvements being undertaken at these other buildings. Based on this a valuer will need to assess potential obsolescence of their subject property.

4. Where a refurbishment strategy is considered this should be related to existing Tenant requirements in the property, and as appropriate requirements of Tenants in the market place who will likely compete for vacant space.
This is a list of issues that may be relevant when a valuer is collecting information in order to consider the valuation impact of various sustainability issues. It is not exhaustive - all buildings and all situations are different.

<table>
<thead>
<tr>
<th>Issues</th>
<th>Reason to include in this list</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Energy efficiency aware management and management systems. Management staff must be tasked with running a building efficiently and be engaged.</td>
<td>Management has a large impact on NABERS Rating. The most efficient plant will be inefficient if not set up correctly. Look for sub-metering, energy recording, continual commissioning and enthusiasm. A building may be more energy efficient, fundamentally, than operational data shows.</td>
</tr>
<tr>
<td>2</td>
<td>Variable speed drives. These may be drives on fans and pumps to allow them to run efficiently at variable speeds. These ensure management are able to moderate air and water flows to meet the buildings requirements without having to throttle the flow and thereby introduce unneeded resistance into the system and use more energy.</td>
<td>Can reduce operating costs and improve NABERS ratings. In an existing building older than say 5 – 8 years these are a reasonable indicator that energy efficiency improvement works have been carried out. Their presence does not guarantee energy efficiency, for instance these can be badly installed.</td>
</tr>
<tr>
<td>3</td>
<td>Building Management and Control System (BMCS). Check for new equipment, recent upgrades/fine tuning. or recommissioning. (Say in last two years).</td>
<td>Properly set up these can run the building efficiently, monitor performance and also detect when things go wrong. Also should be set up to tune the building, the BMCS needs to have the correct front end capabilities to provide tuning related information and tuning related access/adjustment capabilities. This is not the norm or a given in BMCS upgrades.</td>
</tr>
<tr>
<td>Issues</td>
<td>Reason to include in this list</td>
<td>Comment</td>
</tr>
<tr>
<td>--------</td>
<td>-------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td><strong>4</strong></td>
<td>Energy Efficient Common area lighting. Look for efficient lighting on timers (through BMCS) or movement sensors.</td>
<td>Direct impact on base building rating. Can show high return. Often has positive effects on maintenance cost, as energy efficient lighting is usually cheaper to maintain than older variants because lamps last considerably longer.</td>
</tr>
<tr>
<td><strong>5</strong></td>
<td>Energy Efficient Tenancy lighting Reduces energy use and cost to Tenant.</td>
<td>Attractive to Tenants, seen as a pre-requisite for a ‘Green’ building. Minimal impact on base building energy rating. Will become a focus when Building Energy Efficiency Certificates are required. Efficient Tenancy lighting will have a very positive impact on the Building Energy Efficiency Certificate (BEEC) and should have a very positive impact on ‘Green Aware’ Tenants.</td>
</tr>
<tr>
<td><strong>6</strong></td>
<td>Air conditioning system. Older systems such as constant volume, direct expansion, etc. are relatively energy inefficient.</td>
<td>Older equipment may be expensive to run and difficult to control to provide acceptable comfort conditions. Fundamentally disruptive and difficult to replace. May require major shutdowns. Usually only carried out in winter after significant lead times, planning and costs. Usually a need to coordinate with Tenant lease expiries.</td>
</tr>
<tr>
<td><strong>7</strong></td>
<td>Chillers. Old chillers are relatively energy inefficient and expensive and disruptive to replace.</td>
<td>Chiller replacement does not generally show a return on investment, but the savings and NABERS improvement could bring forward a replacement a year or two. Chiller replacements are not disruptive to Tenants if well managed and carried out in cooler months.</td>
</tr>
<tr>
<td><strong>8</strong></td>
<td>Facade and windows. Can improve lettability and reduce heat gain and glare on to occupants.</td>
<td>Impact on energy efficiency of the building and Tenant comfort conditions. Façade upgrades are rare due to the poor ROI, but can result in numerous improvements such as: improved air conditioning performance and thus, energy rating; reduce glare and improve Tenant comfort conditions; building presentation; and increase daylight.</td>
</tr>
<tr>
<td><strong>9</strong></td>
<td>Carbon Monoxide monitoring in car park.</td>
<td>Only runs fans when CO reaches a level when it needs venting. Positive impact on NABERS rating. There are also significant things that can be done to reduce lighting energy loads in car parks. A car park painted white is often an indication that the lighting has been reduced.</td>
</tr>
<tr>
<td><strong>10</strong></td>
<td>Sub-metering.</td>
<td>Allows energy intensive components to be separately monitored and managed. Without metering the components consumption would be lost in the overall building’s consumption.</td>
</tr>
<tr>
<td><strong>11</strong></td>
<td>Water saving devices and monitoring to reduce water use and wastage. Metered and monitored cooling tower consumption. Water saving fixtures, eg a urinal flushing 1.5 litres every 15 minutes will use 50,000 litres a year. A 20 storey building may contain 45 of them (2.3 million litres a year).</td>
<td>Continuing Building Disclosure requirements in the future may include disclosure of NABERS Water for office rating.</td>
</tr>
<tr>
<td><strong>12</strong></td>
<td>Green leases.</td>
<td>Ensures commitment to standards of environmental performance by Landlord and Tenant. By the parties working together greater standards can be achieved. Refer RICS Guidelines for Environment Performance Clauses. Green Leases can have a very significant impact on the building’s footprint and environmental standards, particularly where there are monitoring and strictly enforced performance requirements.</td>
</tr>
<tr>
<td><strong>13</strong></td>
<td>Environmental management systems: Green cleaning Green pest control Green Star Interiors ready Indoor health monitoring.</td>
<td>Management systems that are focused on occupant health and environmental sustainability should provide better indoor environment quality and environment for the occupants. These are a clear demonstration that the building is being run to benefit its occupants and the environment.</td>
</tr>
</tbody>
</table>
It is important for valuers to assess the ease with which buildings can be changed to incorporate higher standards of sustainable performance, if this is material to their assessment of market or investment value.

A building and its systems need to be assessed to judge whether they are capable of being changed and how that work could be carried out. For example, if the building needs to be emptied of Tenants - this will have a great impact on the cost of the upgrade and the potential viability of the building as an investment.

Factors for consideration when planning refurbishment include:

- Can only carry out the works when the building is empty;
- Can only carry out the work when a floor, or possibly a rise of the building, is empty;
- Can only carry out the work at a particular climatic time, i.e. chiller changes are normally carried out in winter when the demand for cooling is low. If a chiller is to be replaced, are there others that can carry the load?

Other factors that will affect the ability to carry out works include:

- Lease terms, particularly if the work requires access to the Tenant’s area e.g. removal of the tenancy ceilings to access and change equipment. Such work will normally have to be undertaken when existing lease commitments expire.
- Significant disruption to the Tenant. As an example, installing a new facade may be possible, but cause rent abatement while a temporary hoarding is installed 1.2 metres inside the line of the existing facade.
- Significant loss of income. Normally the requirement to empty a floor for a refurbishment can be accommodated, emptying a rise, or whole building could be a different matter.

Generally buildings will not achieve their optimal performance until all the works have been carried out, the system commissioned and subsequently allowed to settle down. A NABERS rating requires at least 12 months of data to achieve a rating. Therefore, if something goes wrong i.e. increased energy consumption beyond the target maximum for the desired rating in that period, the rating could be adversely impacted and you will have to wait until you have 12 months of data with the building settled down at the required level.

In all cases, valuers need to know enough about the building to make an informed and logical decision and as appropriate confirm the following:

- Is a retro-fit or refurbishment to good standards of sustainability feasible - there are some things you just cannot do in some buildings?
- Check the Tenant profile, areas leased and lease terms.
- Look into other Tenant/lease/property issues.
- Allow monetary and time contingencies.

Appendix 1 includes three hypothetical case studies, based on real life examples, which show some of the more common issues that can arise during the valuation process relating to sustainability initiatives and potential solutions/impacts. It should be noted that these issues will not be relevant for a large number of valuations, however these case studies show the extent to which sustainability can be critical to the valuation of those buildings whose Tenant profile has specific rating requirements.
### Key Issues:

1. When assessing the sustainability performance of a property there are a number of key items that a valuer should have regard to. These relate to base building and tenancy plant and equipment, property fundamentals and Tenant requirements.

2. Valuers should assess the flexibility of building controls and sub metering to allow the building to be operated in an efficient manner.

3. It is generally important to understand the property Owner’s strategy in relation to sustainability and how that relates to market expectations.

4. Valuers should also, in addition to energy efficiency, have regard to water efficiency, waste and recycling initiatives and Indoor Environment Quality (IEQ).

5. When taking a refurbishment strategy and allowance into account, valuers need to be mindful of the cost vs. benefit of proposed capital expenditure. Key areas for consideration can be found in the ‘Valuers Dozen’.
Case Study 1

Building Characteristics
- 50,000 sq metres
- Sydney CBD, Southern Precinct
- Large floor plates (1,000 to 2,500 sqm)
- Well suited to government Tenants
- Substantial retail food court

Issues
- 70% government Tenants - NABERS Rating improved to 3.5 Stars
- Major expiry mid 2012 - Inexpensive
- Low NABERS Rating of 1.5 Stars - May be a ceiling of 4 Stars

Valuation Impact
- Potential serious vacancy in 2012
- Tenant pool mainly government
- Vacancy allowances and down time
- Minimal capex expended
- Potential for major capex to get to 5 Star NABERS

Conclusion
The property Owner has considerably improved the NABERS Energy Rating by running the existing major base building plant more efficiently. Although the improved NABERS Energy Rating does not yet meet the government's targeted 4.5 Stars, it is much more likely that government Tenants would consider entering lease agreement over a property that is close to 4.5 Stars. If the Owner had not improved the property there was potential for a major building vacancy in 2012 with no ready Tenant.
Case Study 2

Building Characteristics
- 40,000 sq metres
- Sydney CBD, Mid Town Precinct
- Building completed 1988

Issues
- Major building Tenant - Poor NABERS Energy Rating (1.5 Stars)
- Expiry early 2009 - Requirement for 4.5 Stars & Air Quality
- CSR requirement set off shore

Valuation Impact
- Potential serious vacancy in 2009
- Capex requirement
- Poor office market
- Major vacancy / incentive / refurb allowance
- Terminal yield

Conclusion
The Owner was faced with a significant vacancy in the order of 15,000 sq metres should the major Tenant vacate in a very poor office market. In order to retain the Tenant it was necessary for the Owner to commit to a program of works to improve the NABERS Energy rating of the property and indoor air quality. Although this was costly, this would have a lesser impact on valuation than the Tenant vacating.

Case Study 3

Building Characteristics
- 27,000 sq metres
- Sydney CBD, Mid Town Precinct
- Completed 1982/3

Issues
- Mechanical system very inefficient and approaching end of life (max 3 years). Has to be changed for the building to achieve its target rating. Cannot be achieved until the last Tenant on that system has vacated and the plant on that floor upgraded. This will have taken about 8/9 years.
- NABERS Energy Rating (2 Stars) with highly engaged management, all possible management actions have been taken to achieve that current rating.
- Owners have high standards of sustainability
- Owner target of 4+ Stars & high standards of sustainability
- Scope of works to include energy efficient sensor lighting, cooling tower upgrade, separate retail metering, VSD’s, fan coil upgrades, replacement of 2 chillers and commissioning.

Valuation Impact
- Capex requirement - refurbishment allowance
- Poor office market
- Terminal yield

Conclusion
The mechanical systems at the property were approaching the end of their economic life and the Owner would have needed to commit capital expenditure to their upgrade, regardless of targeted sustainability ratings. The Owner has implemented a significant sustainability targeted refurbishment strategy. Given that the number of government and major corporate Tenants requiring benchmark sustainability ratings is increasing, this arguably increases the Tenant pool for the property and decreases its risk of obsolescence and potential plant failure in the future.
### A Valuers Dozen - A Summary

<table>
<thead>
<tr>
<th>Issue</th>
<th>What Should the Valuer Look For?</th>
<th>Cost</th>
<th>Sustainability Benefit</th>
</tr>
</thead>
</table>
| 1. Are there energy efficiency aware management and management systems? | - Is there sub-metering?  
- Is there energy recording?  
- Is there continual commissioning?  
- Is there enthusiasm? | $ | ![Tree] |
| 2. Variable speed drives. | - Have they been installed?  
- Have they been properly installed? | $ $ | ![Tree] |
- Have there been recent upgrades?  
- Has been recommissioned (say in last two years)?  
- Has the BMCS been set up to tune the building? | $ | ![Tree] |
<p>| 4. Energy Efficient Common area lighting. | - Is there efficient lighting on timers (through BMCS) or movement sensors? | $ | ![Tree] |
| 5. Energy Efficient Tenancy lighting. | - Is the lighting energy efficient with zoned controls? | $ $ | ![Tree] |</p>
<table>
<thead>
<tr>
<th>Issue</th>
<th>What Should the Valuer Look For?</th>
<th>Cost</th>
<th>Sustainability Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Air conditioning system.</td>
<td></td>
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<tr>
<td></td>
<td>- Are there older, inefficient systems in place such as constant volume/direct expansion?</td>
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<td></td>
<td>- Are they fundamentally disruptive and difficult to replace?</td>
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<tr>
<td></td>
<td>- Is there a need to coordinate with Tenant lease expiries?</td>
<td>$$$$</td>
<td>Tree Icon</td>
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<td>7</td>
<td>Chillers.</td>
<td></td>
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<tr>
<td></td>
<td>- Do the chillers replacement show a high ROI?</td>
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<td></td>
<td>- Note: savings and NABERS improvement could bring forward a replacement a year or two.</td>
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<tr>
<td></td>
<td>- Could the replacement be disruptive to Tenants?</td>
<td>$$$$</td>
<td>Tree Icon</td>
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<tr>
<td>8</td>
<td>Facade and windows.</td>
<td></td>
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<td></td>
<td>- Can improve lettability and reduce heat gain and glare on to occupants?</td>
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<tr>
<td></td>
<td>- Facade upgrades usually have a very poor ROI but will improve energy rating in summer.</td>
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<tr>
<td></td>
<td>- They can improve air conditioning performance.</td>
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<td></td>
<td>- They can make the building present better and increase daylight across the floor.</td>
<td>$$$$</td>
<td>Tree Icon</td>
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<tr>
<td>9</td>
<td>Carbon Monoxide monitoring in car park.</td>
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<td></td>
<td>Look for fans only running when CO reaches a level when it needs vented.</td>
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<td></td>
<td>For example a car park painted white is often an indication that the lighting has been reduced.</td>
<td>$</td>
<td>Tree Icon</td>
</tr>
<tr>
<td>10</td>
<td>Sub-metering energy intensive plant.</td>
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</tr>
<tr>
<td></td>
<td>- Is metering in place?</td>
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<td>Tree Icon</td>
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<tr>
<td>11</td>
<td>Water saving devices and monitoring.</td>
<td></td>
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<tr>
<td></td>
<td>- Is there metered and monitored cooling tower consumption?</td>
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</tr>
<tr>
<td></td>
<td>- Are there water saving fixtures?</td>
<td>$$</td>
<td>Water Icon</td>
</tr>
<tr>
<td>12</td>
<td>Environmental management systems.</td>
<td></td>
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<tr>
<td></td>
<td>- Are there management systems that are focused on occupant health and environmental sustainability?</td>
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<tr>
<td></td>
<td>Do these include;</td>
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</tr>
<tr>
<td></td>
<td>- Green cleaning?</td>
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<td></td>
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<tr>
<td></td>
<td>- Green pest control?</td>
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<td></td>
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<tr>
<td></td>
<td>- Green Star Interiors ready?</td>
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<td></td>
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<tr>
<td></td>
<td>- Indoor health monitoring?</td>
<td>$</td>
<td>Tree Icon</td>
</tr>
<tr>
<td>13</td>
<td>Green Leases.</td>
<td></td>
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<tr>
<td></td>
<td>- Is there a light, medium or dark green lease in place?</td>
<td>$</td>
<td>Tree Icon</td>
</tr>
</tbody>
</table>
### Valuers Prompt Sheet

This prompt sheet does not alter the responsibilities of the valuer to comply with the requirements of the RICS Valuation Standards (The Red Book).

#### Pre-Inspection
- Confirm property characteristics, including major Tenant profile and extent of retail/comms component.
- Check NABERS and Green Star Ratings expiry dates and ratings history where available.
- Prepare an information request tailored to the property to determine the property Owner's sustainability agenda and the extent of sustainability works undertaken or planned.

#### Inspection
- What base building air conditioning system is in place, how old is it and what potential does it allow for flexibility?
- How old is the BMCS system and does it allow for multi zoned, centrally controlled air conditioning?
- Does the BMCS control car park CO2?
- Are VSDs installed?
- What is the property Owner’s sustainability strategy and what works have been undertaken/planned to implement this?
- Are sustainable lighting and water initiatives in place?
- Are retail/comms areas separately metered?
- Does the property include bicycle parking and Tenant changing areas?

#### Valuation
- Who are the major Tenants and do they have any known CSR requirements?
- When are the major Tenant expiries and what will the property sustainability ratings be at expiry? Are they sufficient to retain the Tenant or attract equivalent Tenants?
- Have sufficient allowances been made to attract Tenants at expiries?
- Will sustainability initiatives decrease the cost of resources and outgoings at a property? Will the cost of management be increased due to highly green plant?
- Will sustainability credentials impact on the required yield return of a potential purchaser? Will they reduce the risk of obsolescence in the terminal yield?

#### Report
- Does the report clearly show how sustainability has affected the valuation, and how it might affect the valuation over the cash flow horizon?
- Does the report identify the extent of sustainability expenditure at comparable properties and the extent to which they influence Tenant and capital transactions?
## Green Star rating tool scores

<table>
<thead>
<tr>
<th>Overall Score</th>
<th>Rating</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-19</td>
<td>One Star</td>
<td>Not eligible for formal certification.</td>
</tr>
<tr>
<td>20-29</td>
<td>Two Star</td>
<td>Not eligible for formal certification.</td>
</tr>
<tr>
<td>30-44</td>
<td>Three Star</td>
<td>Not eligible for formal certification.</td>
</tr>
<tr>
<td>45-59</td>
<td>Four Star</td>
<td>Eligible to apply for a Four Star Green Star Certified Rating that recognises/rewards &quot;Best Practice&quot;.</td>
</tr>
<tr>
<td>60-74</td>
<td>Five Star</td>
<td>Eligible to apply for a Five Star Green Star Certified Rating that recognises/rewards &quot;Australian Excellence&quot;.</td>
</tr>
<tr>
<td>75-100</td>
<td>Six Star</td>
<td>Eligible to apply for a Six Star Green Star Certified Rating that recognises/rewards &quot;World Leader&quot;.</td>
</tr>
</tbody>
</table>
References

RICS Valuation Information Paper 13 - Sustainability and commercial property valuation

Green Building Council of Australia (GBCA)
Green Star Office v3 2008
Green Star Design vs Green Star As-Built
Green Star Office Interiors v1.1
New Zealand Green Building Council (NZGBC)
SKA Rating
NABERS
Commercial Building Disclosure
Property Council of Australia (PCA)
RICS Redefining Zero: Carbon Profiling as a solution to whole life carbon emission measurement in buildings
RICS Guide to Environmental Performance Clauses (Australia)
JLL 2005 (research)
ARUP/PCA (research)
PCA/ARUP/Davis Langdon Guides

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