AUSTRALIA and NEW ZEALAND PROPERTY JOURNAL

June 2011 Vol 3 / No. 2

Land Based Carbon **Property Rights** and Native Title

Valuing Economic Loss of **Ecosystem Services** provided by the Forest

Print Post Approved PP246764/00006
A.R.B.N. 007-505-866 ABN 49007 505 866 ISSN 1836-6635 PINZ ISN 100 1330

THE OFFICIAL JOURNAL OF THE AUSTRALIAN PROPERTY INSTITUTE
AND THE PROPERTY INSTITUTE OF NEW ZEALAND

iPad2 – Now with Built-in Sketching & Camera

ValuePRO empowers valuers throughout Australasia.

Available on the App Store

ValuePRO

EMPOWERING YOUR PROPERTY VALUATION BUSINESS

Find out how to get more out of every day...

Australia:
Call 1300 88 60 35
www.valuepro.com.au

New Zealand:
Freecall: 0800 000 686
www.valuepro.co.nz



contents

On the cover:
Eucalyptus Plantation

PUBLISHERS

Australian Property Institute
6 Campion Street, Deakin, ACT 2600

Property Institute of New Zealand
Level 5, 181 Willis Street, Wellington, New Zealand

EDITOR

Professor Richard Reed editor@api.org.au

EDITORIAL COMMITTEE

Brett McAuliffe, Michelle Leong Glastris, Prof. Chris Eves, Sean Ventris, Ian Mitchell, John Darroch, David Clark.

MARKETING AND COMMUNICATIONS

Joel Leslie
API, National Office

Jacklyn Hensch
Marketing and Communications, PINZ

CONTACTS

EDITORIAL – Australia and New Zealand
editor@api.org.au
Ph: +61 2 6282 2411

ADVERTISING – Australia and New Zealand
jleslie@api.org.au
Phone: +61 2 6122 8724

SUBSCRIPTIONS
journal@api.org.au
Ph: +61 2 6282 2411

DESIGN & PRODUCTION
Iain Smith
API National

CIRCULATION
Barbara Channell

PRINTING & DISTRIBUTION
Paragon Printers, Australasia
Canberra, ACT

Australia and New Zealand Property Journal
ISSN 1836-6635
API ABN 49 007 505 866

PINZ ISN 100 1330

CAB Membership Application Approved, February 2009

The ***Australia and New Zealand Property Journal*** is published by the Australian Property Institute (API) and the Property Institute of New Zealand (PINZ) for the members.

The Publishers invite authors to submit articles of interest that further professional practice in the property industry. Articles of 500 to 5,000 words will be considered. Guidelines for authors are available from the publishers.

The Publishers reserve the right to alter or omit any article or advertisement submitted. Authors and advertisers indemnify the Publishers and publishers' agents against damages and liabilities that may arise from the published material.

Advertisers, advertiser agents and representatives lodging material with the Publishers indemnify the Publishers, its servants, staff and agents against all claims of liability or proceedings in relation to defamation, trademark infringement, breeches of copyright, licenses and royalty, slander, unfair competition, trade practices and any violation of the rights of privacy.

Authors, contributors and advertisers warrant that the material supplied complies with all laws and regulations and that publication of the supplied material will not give right to claims of liability or are being capable of being misleading or deceptive or in breach of respective laws in all States and Territories of Australia and New Zealand.

At times, the *Australia and New Zealand Property Journal* publishes technical material to assist professional practice as supplied by authors and 3rd party sources. The Editor accepts no responsibility for the expressions, opinions, outcomes or effectiveness of formulas or calculations contained in those articles. Readers should seek independent, specialist advice on matters concerning business practice, financial outcomes and legal implications.

API National President's Report

Phil Western
API National President

This is my first report to members as API National President. It only seems yesterday that I became more closely involved with the API through my election to the New South Wales Divisional Council. I became more involved because I wanted to take a more active role in assisting in assuring the long term future of the premier property organisation in Australia.

During that time on Divisional Council and more recently on National Council, I have come to appreciate the diverse membership that we have and the differing needs and aspirations that we all aspire to. What we all have in common is our 'property' connection.

As your new President, one of the most important aspects that I need to understand from you as a member is how we can improve our services to you to ensure that we continue to remain relevant to your needs and expectations of your association with API. While some of this can be obtained through periodic discussions I have with Divisional and National Councillors, I can only gauge a true insight into this by talking with members at the 'coalface'. Over the past six months or so I have spent time meeting with API study groups from a cross section of the NSW membership. Some of the key points that I have gained from these discussions have included the need to ensure that our CPD programs remain relevant to our diverse membership; that this journal has a more practical orientation; that we ensure that our membership is more conscious of what services are available through API; and how those services can better assist them. My intention early on will be to meet with a wider sample of the membership to better understand and appreciate these needs. Having said that members should feel free to either communicate directly with myself or your National Councillor if you have ideas or issues you would like to raise.

Nationally at API, we are continuing to work on our "One API" strategy. While there are a number of key components to this, one of the critical aspects is our IT system. As you will appreciate, the IT system is central to ensuring we 'work as one' whether that is our financial system, membership, continuing education or our communications network. The new Contact Management System (CMS) is an integral part of this, but it is the IT platform itself that is central to the whole strategy. We are currently working on migrating what is a myriad of disaggregated systems together, under one single hosting arrangement. The benefits are immense in that we will have the foundation building blocks in place to allow us to build our professional capability and service to members for the future. It will also reduce our National IT costs considerably (including duplication costs), improve the security surrounding our system and assist in mitigating business risks. I'll keep you informed as we progress. As a first part of this project we are currently in the process of migrating our new CMS system across for API to host.

An integral part of the communication that we have with our membership is through our website. The enhancement of the website has been a key focus of our IT Manager, Joel Leslie over the past few months. The new API website resides on a platform which will syndicate API technology on a single foundation. The new API website is a continually expanding & improving product of the API, which aims to deliver up to date information and services to Members. The website is an outcome of the API Online Strategy, aiming to revolutionise the online presence of the API. The API Online Strategy integrates the website with Social Media as a formal communications tool, which is a first for the API. The April e-News saw its first ever Web Video update, delivered by Youtube via the new API Website.

The implementation of the API's new Limited Liability Insurance scheme continues with many members now signed up and an influx of corporates following the implementation of API corporate membership category.

The Scheme commenced on the 1st December 2010 and applies to all members of the Australian Property Institute Valuers Limited ("APIV").

By now most members would be aware that the API has submitted to the Professional Standards Council (PSC) a number of proposed changes to the Scheme, the latest of which is a Corporate Membership Class and the establishment of a new lower limit "Minimum Sum Insured" category to $1 million.

The API is aware that the Scheme does not always fit members current business practices, the API will be submitting further Scheme changes to the PSC in the later part of the year to address some of the concerns members have raised.

Members who undertake the valuation of real property are encouraged to participate in the Scheme for their protection.

I look forward to my role as your National President. While there are a range of enhancements that I would like to see bought to the Institute, central to my philosophy in moving the Institute forward will be to ensure that the API remains relevant to our membership. If you have issues that you would like to raise or suggestions as to how we can improve our service to you, then please feel free to let me know your views.

Phil Western
API National President

PINZ President's Report

Ian Campbell
PINZ President

The past few months have been particularly busy and productive for the Property Institute. Whilst efforts have been made to assist our Valuer Community in addressing the imposition of a valuation ordering system upon valuer members, and for the benefit of all professional members, the commencement of the pathways programme together with work on launching the quality assurance accreditation scheme later this year are very exciting steps for the institute. In this issue, I would also like to mention this year's very successful Looking Forward conference in Wellington and the individuals recognised for their outstanding achievements at the awards dinner.

In April, presentations were made to the main trading banks for the future delivery of the Quality Assurance Accreditation (QAA) programme, a voluntary programme endorsed by the Valuers Council and heralds a new era of improved business practice, providing a further layer of reassurance for clients. The QAA scheme can also be adopted by other professional communities. QAA is a significant and comprehensive leap forward in providing quality outputs. I would ask that all members provide their support to the QAA scheme which will also lead to the establishment of a separate Quality Assurance panel. The funding of the scheme is significant and will need to be recovered through member subscriptions.

On a national perspective, this year's government budget announced in May provided a small glimmer of reassurance, particularly for our property sector, that the New Zealand economy was beginning to move slowly from its weakened and heavily indebted position. We now may be at the point in seeing the beginning of some relief and impetus in the economy, given that the last six months has been particularly challenging for New Zealand households and businesses alike, particularly in the Canterbury region. Unlike the growth seen in the Australian economy, New Zealand's economic resilience has been put to the test and fiscally stretched across the regions. With the exception of certain markets, our primary industry is always the first sector where we look for any signs of recovery.

In May the Property Institute six monthly market survey was conducted to ascertain our collective member views of the economy and impact upon property within each sector. Again we received a solid response from our members who were also interested in receiving the results back as well. Not surprisingly the survey across the residential, commercial and industrial markets showed that there had been little change in economic conditions, market demand and property value compared to the results of our previous survey in November last year. However, the results did indicate an optimistic outlook favouring the primary sector, particularly rural property demand and growing signals in this area. As New Zealand's economy is mainly driven by the primary sector, it was encouraging to see from our members in the rural sector, that improved sentiment is presently seen and that positive signals for rural property are expected to continue.

We recently hosted visiting dignitaries from the Practice Qualification Registration Centre of the Ministry of Housing and Urban-Rural Development from the Peoples Republic of China. The visit held at the offices of Simpson Grierson comprised a very successful day of presentations given by Property Institute members and staff and ably assisted by Jessie Jiang of Sheldons who aided in translation.

It was pleasing to hear that the delegation was reported to have been very impressed, particularly with our online learning, membership registration and professional pathway programmes presented by Allan Smee. The delegation has since shown strong interest in further cooperation and development of closer ties between the Property Institute and the Practice Qualification Registration Centre, both organisations representing New Zealand and China respectively, and particularly applicable for Registered Property Managers.

The role of the Practice Qualification Registration Centre is to manage individuals working within China's vast construction industry. This includes examination and licensing of Architects, Surveyors, Project Managers and now Property Managers. The extent towards the future licensing of Property Managers in China is expected to be into the many thousands. The Property Institutes history and developed system of member registration together with advancements in online learning was seen as cutting edge and of great value if a similar solution was considered for China. The visit also confirmed our own view of the importance in the advancement of Professional Pathways which leads to registration for all our members. The Ministry noted that the Property Institute provided an equivalent function within New Zealand without government

funding, and was seen as a very successfully run, self funded industry body. At this year's conference in Wellington, I was very pleased to welcome All Black Coach and brains behind this year's Rugby World Cup challenge Mr Graham Henry who was one of our key note speakers and delighted all of those present. The Property Institute awards were announced at the conference dinner. As a result, I would like to extend our congratulations to Song Shi, Matt Straka and Callum Taylor who took this year's Academic, Young Property Professional and Industry Awards respectively.

Congratulations are also extended to those achieving fellowships this year and special thanks is given to our conference organisers and to all our sponsors who contributed towards the success of the event.

On the National Board there have been changes. Mr Greg Ball replaces Mr Ian Mitchell as Central Region representative, thank you Ian for your contribution, and as my own term as National President expires following the conference, I will still continue to reside on the Board as Northern Regional representative providing my full support to the many initiatives the Property Institute has in play.

Ian Campbell
President
Property Institute of New Zealand (Inc)

advertising with the API THE AUSTRALIAN PROPERTY INSTITUTE

Leading the property professions

The Australian Property Institute (API) represents the interests of more than 8600 property professionals throughout Australia. The Institute's primary role is to set and maintain the highest standards of professional practice, education, ethics and professional conduct for the property profession. The Institute is highly regarded and respected throughout Australia and in some states government regulations specify that property professionals must belong to a member association such as the API. Many Australian financial institutions also require property professionals who carry out mortgage valuation work to be a member of the API. Members of the Institute are qualified and skilled professionals with detailed market knowledge, practical experience and technical expertise and provide independent, confidential, fair and honest advice on valuation and property matters. API Members provide a comprehensive range of services to a broad range of clients.
The services API members provide include:

- Residential, commercial, plant and machinery valuations
- Property and advisory services
- Sales, acquisition and leasing advice
- Legal advice
- Investment analysis and research
- Property fund and asset management

AUSTRALIA AND NEW ZEALAND PROPERTY JOURNAL

The Australia and New Zealand Property Journal (ANZPJ) was originally published in 1930.
ANZPJ circulates to some 11 000 property professionals, 8600 in Australia and 2200 in New Zealand 4 times a year. Research shows that each issue is kept and used as a reference tool by property experts, due to the high standard of articles.

ENEWS

The API has a membership of over 8600 property professionals. The API e-news is a web based communication tool used to keep members up-to-date with news in the property industry. Distributed every two months the newsletter provides a range of advertising units to suit and can link your ad directly to a specific website address.
All editions of e-news are archived on the API website so your advertisement and link will always be working.

API WEBSITE

The API website offers a more dynamic offering of information from every aspect of the property profession, divisional news, specialist areas, practitioner search, extensive library, education, classifieds and news feed.
The API accepts advertising that will be of interest to the API members and property professionals.

Contact the API for a Media Kit
Joel Leslie jleslie@api.org.au
p. 02 6122 8724 m. 0403 138 855

api.org.au

Valuing the Economic Loss of or Modification of the Ecosystem Services provided by the Forest

By Ian A Curtis PhD

Curtis NRA Australia.

PO Box 187 Brooklyn NSW 2083

ian@curtisnra.com.au
www.curtisnra.com.au

P: 0429 469081

Benefit transfer procedures, along with an opportunity cost valuation, is used to assess the economic loss to the landholders of a large scale unauthorised logging operation in the Middle Fly region of the Western Province of Papua New Guinea. Loss of or modification of the ecosystem services provided by the forest were estimated to be in the vicinity of 56 million PNG Kina per annum, or a net present value of in excess of 500 million PNG Kina depending on choice of discount rate. The matter is currently before the National Court of Papua New Guinea for a ruling to determine the quantum of compensation due to the customary landowners.

Unauthorised logging was carried out by the contractors of a road to connect Aiambak and Kiunga in the Middle Fly region, Western Province, Papua New Guinea. The environmental plan that was accepted and presumably agreed to, provided for selective logging along the road perimeter up to one kilometre either side of the road, in order to pay for the road.

The activities took place between about 1994 and 2004. Contrary to the proposal and agreement, the contractor principal companies constructed a very much inferior road, which is unusable, and which is the source of many ongoing

environmental problems. After ten years of construction and logging, the road did not even reach its destination (Kiunga). During the process, the contractor principal companies extracted a large timber resource, pushing roads and logging tracks into the pristine lowland forest for up to 20kms off the main track. Apparently no attempt was made to comply with the PNG Code of Practice for (even) Logging Roads, and no attempt was made to comply with PNG Environmental Practice. As a result the customary landowners are left with severe environmental problems, and an unusable road. The ecosystem services of the formerly intact and untouched forest have been severely modified or reduced.

The customary landholders lead a truly subsistence lifestyle, and as such this invasion and wanton destruction of their livelihood resources has a far greater impact on them than for other more developed societies.

The economic value of the loss of/or modification of forest ecosystem services has been estimated to be in the vicinity of (PNG)K56,000,000 per year.

BACKGROUND

The author was engaged after having perused the reports prepared by Dr D R Melick (2003) and Tom Diwai Vigus (2008), by the Centre for Environmental Law and Community Rights (CELCOR) in Papua New Guinea, and as a result of the relevant directions made by the National Court of Papua New Guinea. CELCOR are advised and assisted by the Environmental Defenders Office of NSW (EDO), Australia.

The first defendant, Paiso Limited, is a landowner group ostensibly representing the customary landowners of the Middle Fly, Western Province. Paiso Limited applied for and was granted a Timber Authority TA; 024 on the 18th April 1994. The second defendant, Concord Pacific Limited, was engaged to conduct the timber harvesting as recompense for the construction of a road connecting Aiambak with Kiunga, as outlined in the Environmental Plan. The Environmental Plan prepared by Paiso Limited provided for a 40 metre wide road surface including shoulders, and selective logging of the land along the perimeter of the road. The area where logging was permitted extended 1000 metres each side of the road, for the full 246 kilometres distance (adjusted to 195km according to Mellick 2003). Selective logging ahead of the road construction was permitted to aid financing construction of the road; however it was assumed that such logging would be within the agreed corridor.

Such arrangements in Papua New Guinea, and other developing nations, do not always proceed in accordance with the expectations of the landowners. AusAid has found that in Papua New Guinea; "once the representatives of the incorporated land group have signed

the Forest Management Agreement, the National Forest Service has very little more to do with the incorporated land groups. No assistance is provided to the groups to learn how to involve themselves in business opportunities offered by the timber industry and the Forestry Act prevents landowners from negotiating directly with logging companies. The National Forest Service says it lacks the funds to help land groups with their financial management and business opportunities." As a result, "most logging companies have not become involved in the social and economic welfare of the people on whose land they are cutting down trees" (Power, T. AusAid. Undated), moreover, AusAid reference a 2001 World Bank review of 32 proposed logging projects which found that over 90 per cent of landowners were not aware of the implications of belonging to an incorporated land group. Even fewer landowners were aware of the possible economic opportunities provided by their incorporation into a land group, or the responsibilities of the group's leaders" (Power, T. AusAid. Undated)

Land in Papua New Guinea is currently 97% held as Customary Land in a mostly Patrilineal system, where there is no formal land titles and/or registration (Anderson, T. University of Sydney, 2006). As such, formal valuations of land are only able to be undertaken in the City and Town areas, where land has been alienated, a market exists, and there is a record of sales that have taken place. Sale price evidence is a mainstay of the principles of the valuation of land (Curtis 2004).

The landowners in the Middle Fly lead a truly subsistence lifestyle and rely completely on the natural resources provided by their land and waterways. Any loss of these natural resources has far and broad-reaching consequences, involving far more than money. Loss of possession includes "the natural resources and customs such as livelihood practices for which they may claim rights or ownership" (Snyder et al., 2003). Loss of possession also refers to broad but interrelated categories of loss, namely:

- Loss of possession; ie. "which implies a value which is alienable or more or less amenable to economic compensation;" and,
- Loss of kinship or belonging, "which involves an intimate bond or sense of place, which is inalienable."

Research has shown that full regeneration of a tropical lowland forest can take up to about 80 years (Brown and Lugo 1990), depending on the level of disturbance, during which time invasive and opportunistic species can establish and invade cleared areas and forest edges. Vigus (2008) cites a number of authorities who assert a longer period up to 300 years for full recovery to resemble a primary rainforest in biomass and species diversity. Over time it is the lack of direct light due to the regenerating forest that contributes to the demise of the opportunists, and the forest returns to its former state as a secondary rainforest.

> "up to 300 years for full recovery to resemble a primary rainforest in biomass and species diversity…

The Environmental Plan clearly states that by far the majority of logging activity was to take place away from villages and traditional resource harvesting areas where 'sense of place' is more pronounced. Reports prepared post logging by Dr D R Mellick (2003) and Tom Diwai Vigus (2008) appear to confirm this, as do research by the University of Papua New Guinea, and this author's observations of satellite images.

If this is established beyond a reasonable level of doubt, Category 1 above would apply, and the economic cost of the environmental damage would theoretically be able to be calculated. It is in the jurisdiction of the Courts to determine how this damage is to be compensated.

As the author of this report has not had the opportunity to inspect the environmental damage first hand, the reports by Dr D R Melick and Tom Diwai Vigus are relied on as portraying a reasonable and accurate description of the environmental impact. These reports are filed with the National Court of Papua New Guinea, Waigani.

THE ENVIRONMENTAL IMPACT AND LOSS OF ECOSYSTEM GOODS AND SERVICES DUE TO THE ROAD CONSTRUCTION AND LOGGING ACTIVITIES

Unauthorised logging activities far in excess of the agreed one kilometre each side of the road have caused significant environmental damage, including the direct impacts of tree and canopy loss and collateral tree damage and sapling loss due to tree-fall; a change in the nutrient balance; collateral vegetation damage and soil compaction on logging tracks by the use of heavy machinery; and, indirect environmental impacts by way of the potential for erosion, particularly on the new and steeper logging tracks, leading to increased sediment loads to the creeks and rivers downstream; potential for weed invasion in canopy gaps; promotion of pioneer species and the suppression of 'oskars'.

The agreed envelope to encompass both the road and the area to be logged, as described in the Environmental Plan, was to be about 50,000 hectares. However, research by the Remote Sensing Centre at the University of Papua New Guinea using satellite imagery, reveals a logging and road construction footprint closer to 200,000 hectares. Maps based on

satellite imagery were provided to Tom Vigas along with GPS points, which were included in his report (2008).

'Environmental impact' for the purposes of this paper is defined as 'the loss of or reduction or modification of ecosystem goods and services provided by the land impacted by logging, collateral damage and edge effects'. It does not include the value of timber removed.

Edge effects can encompass both human induced and other biophysical effects, including microclimate variables across the ecotone. Wider corridors or larger gaps are shown to have a more significant impact than narrow corridors or smaller gaps due to depth of penetration of the various effects into the forest. The effects are more pronounced in closed canopy environments closer to the edge, ie. rainforest, however they still exist and extend further into an open forest environment than a closed forest environment. Photosynthetically active radiation (PAR) reaching the forest floor has a significant relationship with distance from clearing, leading to possible emergence of alien species at the edge.

> "the impact area is some four times the area proposed under the Environment Plan, and four times the impact area presumably agreed on by the parties…

Soil surface temperatures both on the surface and at 10cm depth are highest at the edge and extend inwards depending on the orientation of the corridor and season (declination of the sun). Air temperatures and vapour pressure deficits have more pronounced gradients for open canopy forests than closed canopy forests, which has implications for regeneration. Overall, linear clearing impacts on microclimate decrease with distance from the edge. Wide clearings or gaps without canopy retention allow greater invasion of weeds, and result in greater penetration of disturbance indicator species (Goosem and Turton 2000).

The reports of Dr D R Mellick (2003) and Tom Diwai Vigas (2008) provide firsthand accounts of the environmental and landscape damage due to the road construction corridor and logging activities.

Mellick (2008) asserts that the road construction project fails in its primary intent of delivering a permanent dry weather road connecting Aiambak and Kiunga. Poor road design and construction techniques, and failing to comply with the PNG Logging Code of Practice for even a 'logging road', let alone a road that will provide a reasonable level of service to these remote communities, has been shown to be incontrovertible evidence of a carefully contrived 'scam' to defraud the landowners in the Middle Fly and the Lake Murray Resource Owners Association (LMROA) region, of a valuable natural resource.

Both Dr D R Mellick (2003) and Tom Diwai Vigas (2008) refer to the very many, up to 49, major secondary roads and numerous tertiary roads and skid tracks leading off the main road, that were used to access timber resources. Only 8 of these roads can be accounted for to access villages. Dr Mellick recorded 232 direct violations of the PNG Logging Code of Practice with the highest level of incidental losses (collateral damage) recorded in the literature. Undersized logs were commonplace and reject logs were burnt or buried. Other large areas of forest were burnt out due to negligence in maintaining burning refuse piles. Many contraventions of the PNG Environment Act 2000 were also recorded. Tom Diwai Vigus records many interviews with the people of the region, and demonstrates in many ways the connectedness the clans have with

their customary lands. The value of the timber removed and shipped was in excess of 137 million PNG Kina, although Vigus estimates a total loss of the timber resource due to wastage of 157 million PNG Kina

However, the most cogent issue addressed in this paper, is that the impact area is some four times the area proposed under the Environment Plan, and four times the impact area presumably agreed on by the parties.

APPROACH

Murray, J. (1954, 1967), asserts that the task of a valuer is to use as many approaches as are possible under a particular set of circumstances to weigh all the evidence and determine a value that can be supported in a court of law.

The property market does not exist on customary land in Papua New Guinea, however there are markets for produce, which can elicit potential earnings on land by a family group. This can be both seen as an opportunity cost method of valuation, which when combined with land for housing and gardens, and other benefits from the forests, such as 'subsistence' value from customary land such as access to materials for medicines, fuels, fences, weapons, tools, canoes, textiles, string bags, cords, musical instruments, artworks, articles of personal adornment, ritual and magic (the equivalent value of these resources is difficult to calculate), can provide vital insight into the landowner's perceptions of value. Evidence also exists for rental values of land given over for resource extraction, or for example, the growing of Oil Palm Plantations. If these truly represented a 'market' price for land and resource leases in Papua New Guinea, they could be capitalised to arrive at a capital value. However, Anderson (2006) clearly states that the quantum of resource rents paid is very low (10 to 20 PNG Kina $ha^{-1}yr^{-1}$), and greatly undervalues land in Papua New Guinea.

Anderson's work on opportunity cost in 2006 established a base-line income level of 13,500 PNG Kina per family group of 7 (mother and father and five piccaninnies), although some families can and do earn up to 18,000 Kina by adding in external employment. The estimates were based upon what the equivalent food, housing and other essentials would have cost if they were living in a town area, such as Madang. It does not include materials for medicines, fuels, fences, weapons, tools, canoes, textiles, string bags, cords, musical instruments, artworks, articles of personal adornment, ritual and magic, etc. This is useful data when attempting to assess equitable recompense for loss of opportunity or resources. It becomes more valuable when the population of the regions is known.

> "The Oxford Dictionary defines Usufruct as: 1.Law. "The right of temporary possession…

The PNG Electoral Commission put the population of the Middle Fly, Western province to be 55,853 in 2005. Moreover, the National Population Census put the population of the Lake Murray Land Owners Group region to be 9,796 in 2002.

The ancient Roman and Scots' legal and economic principle of usufruct is applicable in any valuation of natural resources, including ecosystem goods and services. The Oxford Dictionary defines Usufruct as: 1.Law. "The right of temporary possession, use, or enjoyment of the advantages of property belonging to another (or in common), so far as may be had without causing damage or prejudice to this. Usufruct is the power of disposal of the use and fruits, saving the substance of the thing". This definition is easily understood when it is considered that land (real property or real estate) has long since been regarded as different from personal property.

Thomas Jefferson's letter to James Madison on September 6, 1789, explains that the legal concept of usufruct can be traced back at least as far as ancient Roman law and has changed little over the centuries. In Jefferson's time, as now, "usufruct" referred to "the right to make all the use and profit of a thing that can be made without injuring the substance of the thing itself. It was a term used to describe the rights and responsibilities of tenants, trustees, or other parties temporarily entrusted with the use of an asset -- usually land." (Constitutional Law Foundation, USA).

Sir William Petty (1623-1687), Valuer General for Ireland, believed that capitalization of all of the profit and benefit produced by land held in the public domain was a logical economic step to take to determine capital value, or vice versa (Roll 1961). However, Petty was uncertain as to how to determine the rate of return from land other than using the surplus from production as rent, but came up with an ingenious solution. Petty determined that the usufructuary rights to land of three generations of humans would be a reasonable estimate, and as three life expectancies in England in the 17th Century were 120 years, he computed the value of land at twenty one year's purchase of its annual rent, or in money-capital terms, a capitalisation rate of 4.76% (Roll 1961). The productivity method of valuation therefore enables a valuer to determine the capital value of a property from the passing rent (or subsistence income – usus fructus per annum), or vice versa, the economic rent from the capital value, using market capitalisation rates.

In order to arrive at a benchmark for a range of values of ecosystem goods and services formerly provided by the forest, benefit transfer methodology is used. This methodology has broad application world-wide, as ecosystem valuation has proliferated during the last decade. The studies selected include many of forest ecosystems, and often in developing nations. A statistical analysis of a selection of studies within a range of values, including similar vegetation types, may provide an insight into the appropriate range of values to be awarded for compensation. In order to 'ground-truth' the results, they are compared to Anderson's (2006) study on opportunity cost in PNG and the population statistics in the LMROA and the Middle Fly region.

THE VALUE OF ECOSYSTEM GOODS AND SERVICES PRIOR AND POST UNAUTHORISED LOGGING ON THE SUBJECT PROPERTY

'Environmental impact' for the purposes of this report is defined as 'the loss of or reduction or modification of ecosystem goods and services provided by the land impacted by logging, collateral damage and edge effects'. The spatial extent of the environmental impact of the unauthorised logging has been estimated at 150,000 hectares, including direct impact, collateral damage due to tree-fall and movement of heavy machinery, gaps created due to tree-fall, logging tracks and staging areas, edge effects and flow on effects. Moreover, considering the real threats of weed invasion, the risk of severe erosion without immediate remediation of the poorly engineered logging tracks, and the uncertainty of downstream effects such as high sediment loads to rivers and streams, this is considered a conservative estimate.

Prior to the road construction and logging enterprise, the approximate route of the road was considered to be in as

natural a state as any lowland tropical rainforest, which has only been subject to subsistence resource extraction by hand, and perhaps hand tools. Mechanised tools were possibly limited to those that could be carried by hand, for example, chainsaws. Timber extraction would have been small scale, and limited to timber for housing and canoes. No timber had been cut for export. Ecosystem goods and services could be argued to have been 100% intact, considering the low use levels of the people of the Middle Fly. Moreover, the road route was well removed from their traditional high use areas around Lake Murray.

The unauthorised logging adjacent to and extending outwards from the agreed corridor clearly has had an environmental

> "Post road construction and logging they have been diminished by up to 80% where impact is greatest…

impact, all the more particularly owing to its pristine condition. Gas regulation (atmospheric composition) and climate regulation are diminished, disturbance is exacerbated, erosion is increased, genetic resources and biological control are diminished. Potential flow-on effects include increased sediment loads to the streams and rivers, suppression of climax species (oskars) in favour of pioneer species, and weed invasion. Opportunistic and invasive species will capitalise on the hot and dry conditions prevalent in tree fall gaps and alongside the road and skid tracks well into the forest. These species are of particular concern along the margins of intact forest. None of these species will penetrate into the intact forest due to high moisture levels and lack of heat and light.

The value of the forest ecosystem goods and services would have been close to the maximum possible prior to road construction and logging. Post road construction and logging they have been diminished by up to 80% where impact is greatest, logging tracks, staging areas, clear fell areas, down to 40% where the impacts are collateral, tree fall damage to other vegetation, including 'topping' etc. Every tree removed would have damaged surrounding vegetation, and depending on the size of the tree being felled, this could amount to up to one half of a hectare per tree fall.

METHODOLOGY

Examination of a selection of 22 case studies between 1994 and 2004, involving both valuation of ecosystem services and payment for ecosystem services in both developed and developing nations has revealed a range of both lower and upper values (Table 1).

Applying the now preferred practice of 'Benefit Transfer', where no other stated or revealed preferences can be elicited, and no surrogate market such as land values exists, will help to determine a range of values for the loss of ecosystem goods and services due to the unauthorised logging outside the agreed corridor.

'Benefit Transfer' uses economic data captured at one place and time to provide inferences about the eco-value at another place and time. The database of past studies represents an empirical stock of data knowledge, which is invaluable if properly applied. Benefit transfers can only be as accurate as the initial benefit estimates; however, a portion of measurement error can be passed through unless care is taken.

The 22 case studies used have been deemed to be appropriate considering the limited timeframe. The data set has been charted on a log scale, and after reviewing the descriptive statistics of the data set, it was decided to remove the outliers (lowest and highest orders of magnitude). These case studies are all valuations of forests, and in some cases claim to value specific aspects of them, insofar as their contribution to human well-being. They also utilise a variety of the accepted methods, which also tends to limit the biases of any one particular method.

Eleven of the 22 case studies give both an upper and a lower value range for the ecosystem services provided by the forest valued. Both the mean and median values were calculated for the total combination of upper and lower values, then the lower values alone and the higher values alone.

Anderson's (2006) work on opportunity cost valuations in Papua New Guinea resulted in an average annual sustainable income per family group of seven, of 13,500 Kina, up to a high of 16,000 Kina for those that specialised on growing a few specialty items for markets. By far the majority of the people only cultivate small areas, of say one or two hectares. Reliable information such as this can be used as a comparison with other non-market valuation methods, and it is used in this paper.

RESULTS

The areal impact on the forest occasioned by logging activities outside the agreed envelope of about 50,000 hectares, amounted to 150,000 hectares. The forest was an untouched, pristine, lowland rainforest. Reduction and or modification of the forest ecosystem services is estimated to be 80% on logging roads, skid tracks and staging areas, and 40% elsewhere, including collateral damage from tree fall, edge effects, and flow on effects. Without commissioning a physical survey of the damage site, it is not possible to provide an exact calculation; however, it could be assumed that the area damaged by

Table 1: A selection of case studies from both developed and developing nations for analysis (Curtis 2008).

Researcher/Author	Subject of the Research	AUD $ha-1yr-1	AUD $ha-1yr-1
		Lower range	Upper range
Bennett 1995	Dorrigo National Park, NE NSW Australia (economic value of recreation)		1500
Bennett 1995	Gibraltar Range National Park, NE NSW Australia (economic value of recreation)		46
Blackwell 2005	Boreal and temperate forests (ecosystem services)		543
Blackwell 2005	Global forests (ecosystem services)		1743
Blackwell 2005	Tropical rainforests (ecosystem services)		3609
Castro 1994	Costa Rica Wildlands (all services)	170	357
Chomitz et al 1998 *	Costa Rica (various environmental stewardship practices)	40	96
Costanza et al 1997	Global biomes (all services)		1343
Curtis 2004	Wet Tropics Queensland, Australia (all ecosystem goods and services within tenures)	210	236
Curtis 2004	Wet Tropics Queensland, Australia (all ecosystem goods and services across tenures)	149	342
Curtis 2008	Wet Tropics Queensland, Australia (ecosystem services, rainforest on private land)	373	446
Davis et al., in Duthy 2002	Gibraltar Range and Dorrigo National Parks, NE NSW Australia (recreation)	264	298
de Groot 1994	Panama's forests (use and non-use values)		835
Driml 2002	Wet Tropics Queensland, Australia (Tourism)	112	224
Duthy 2002	Whian Whian National Park, NE NSW Australia (use and non-use values)	214	404
Flatley & Bennett 1996	Vanuata tropical rainforest on the islands of Erromango and Malakula (conservation)		87
Gillespie 1997	Budderoo National Park, SE NSW Australia (economic value of recreation)		809
Kishor & Constantino in Chomitz et al 1998	Costa Rican forests (use and non-use services)	162	214
Lockwood & Carberry 1998	Southern Riverina, Victoria, Australia (preserve remnants)	38	87
Lockwood & Carberry 1998	NE Victoria, Australia (preserve remnants)	43	98
Pimental in Myers et al 1997	Global rainforests (sustainable use value)		367
Tobias & Mendelson 1991	Monte Verde Cloud Forest Reserve, Costa Rica (domestic recreational value)		20

Notes *1. *Denotes environmental payment scheme*
2. Studies more than ten years old have been adjusted to 2002 values

gaining access to individual or stands of trees to be logged was at least equal to the impact area of the actual tree felling, collateral damage and edge effects. Accordingly, the loss of or modification of the forests services is estimated to be 60% of the entire 150,000 hectare footprint

Descriptive statistics of the data-set to be used for 'Benefits Transfer' show the following characteristics (Table 2).

Table 2: Descriptive statistics of the data set.

Item	Mean (AUD$/ha/yr)	Median (AUD$/ha/yr)
Lower Range Values	161	162
Upper Range Values	250	267
All Values	251	212

As the data-set is highly skewed, the appropriate measure of central tendency is the 'median'. In order to incorporate the lower values (which were too few to be reliable alone), we have adopted the median for 'All Values' (AUD$212 ha-1yr-1), and the median for 'Upper Range Values' (AUD$267 ha-1yr-1), as the extent of the value of the reduction or modification of the forest ecosystem services.

The above individual values per hectare were computed in terms of the areal damage footprint (reduction in ecosystem services), not the logging footprint, resulting in the following data table (Table 3).

Table 3: Using the adopted 'all values' and 'upper' values for a final range of values of the damage in PNG Kina.

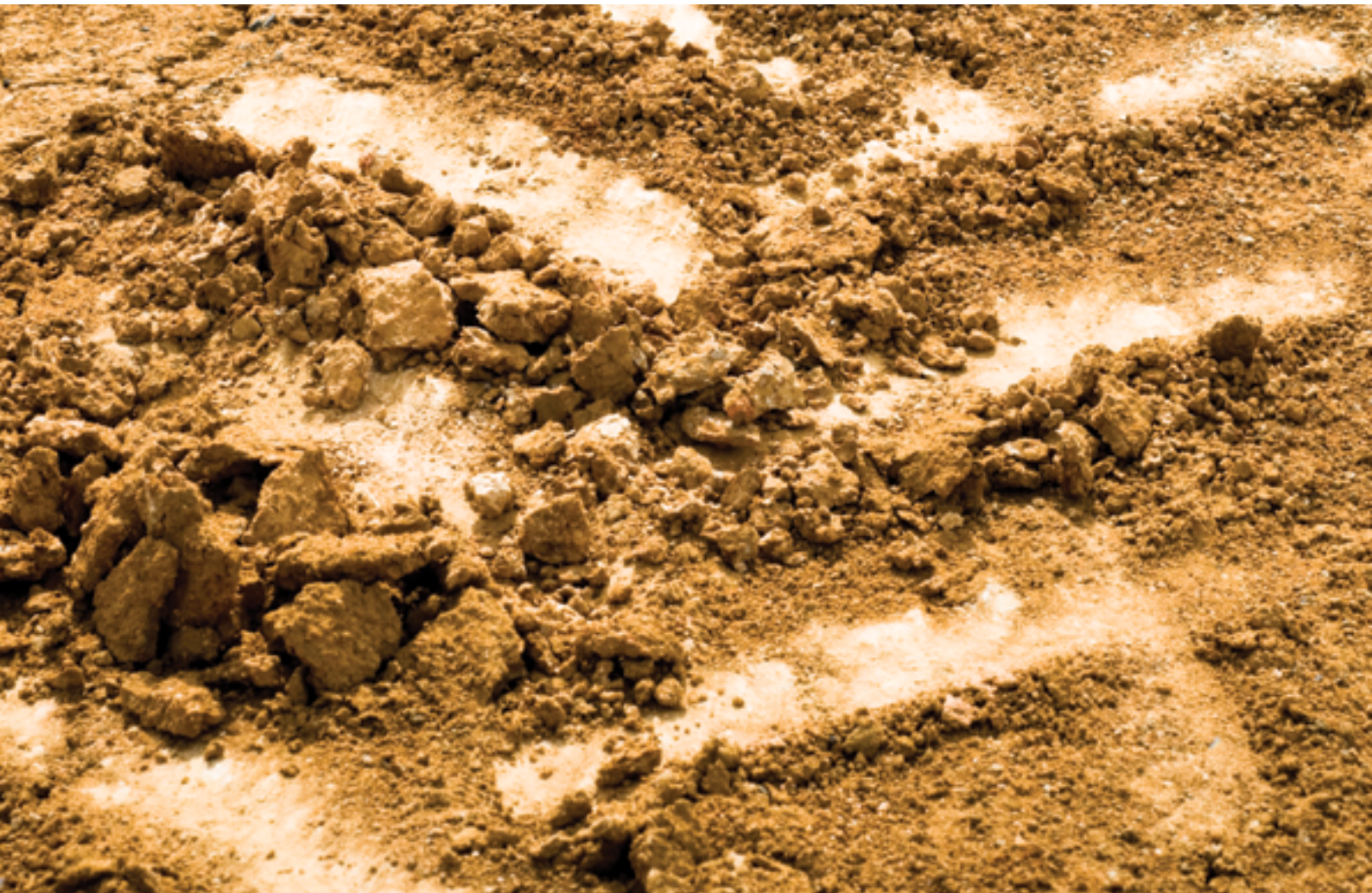
Range	Hectares	AUD$/yr	PNG Kina/yr
Lower	90000 (60% loss)	19,080,000	50,562,000
Upper	90000 (60% loss)	24,030,000	63,679,500

Using Anderson's (2006) estimate of the opportunity cost of customary land, and the National Population Census data for the people of the Middle Fly and the Lake Murray Land Owners Group, the estimated total gross income and potential value of the real property utilising a capitalisation rate of 5%, for the regions is given in Table 4.

Table 4: Opportunity cost valuation of Customary Land in the Middle Fly and Lake Murray.

Item	Lake Murray ROA region (PNG Kina)	The Middle Fly (PNG Kina)
Gross Subsistence Income	18,892,286	107,716,500
Gross Real Property Value	377,895,714	2,154,330,000

Comparing the median upper and lower values of damage (say K56 million/ha/yr), to the above capital values for the land resource, results in a yield cost of 52% in the Lake Murray region, and 2.6% for the whole of the Middle Fly. Clearly the loss of forest services and environmental damage is evident farther afield than the LMROA region, and extends for the full 195 kilometres through the Middle Fly region. Accordingly, the impact on the subsistence net primary production yield of 2.6% for the Middle Fly would appear to be a market yield for subsistence primary production, and thus it would support both the results of the Benefit Transfer procedures (including the data set selected) and Anderson's study on Opportunity Cost.



LIMITATIONS OF THIS STUDY

The limitations of this study are explained in the section headed 'methodology'. However, it is also fair to say that if any methodology is at all useful, it should produce a result within at least an order of magnitude of any other study utilising an alternate methodology.

It is claimed that Benefit Transfer is a methodology that is, and never will be, as accurate as a primary valuation study. This may well be so, however, the 'benefit' of benefit transfer, is that by using a reasonable sample and diversity of studies, with all their biases and errors, statistical and otherwise, gross error across the sample is reduced dramatically.

Moreover, the special issue of the Elsevier Journal, Ecological Economics, in 2006, includes a paper by Ready & Navrud, who claim that errors in benefit transfer can be in the range 25 to 40%, both within and across countries.

However, correlation with Anderson's 2006 work on Opportunity Cost Valuation lends a measure of comfort to the results, which exhibit a range of values of 25%.

It is always possible to carry out a primary valuation study, given a reasonable time frame, however there will be a strong element of bias in any willingness to pay survey based on the socio economic status of the sample participants.

CONCLUSION

In the considered opinion of this author, the loss of, or modification of ecosystem services in the Middle Fly, Western Province, Papua New Guinea, owing to the illegal logging activities associated with the construction of the Aiambak to Kiunga Road, are in the range: Fifty million, five hundred and sixty two thousand Kina per annum, to sixty three million six hundred and seventy nine thousand five hundred Kina per annum (K50,562,000 to K63,679,500 per annum).

A lump sum compensation can be determined by converting the above figures to a net present value (NPV) by using appropriate discount rates. Depending on the discount rate and the term applied, this figure could be considerably higher than **K500 million**. To put this in perspective, the logging companies extracted or destroyed K157 million worth of trees (logs), but did many hundreds of million kina worth of damage in the doing.

To further break down the values, the value range ascribed in this study to the loss of or modification of ecosystems services is K212 to K267 per hectare. Yet the value of timber removed was over K1000 per hectare. Timber is only ONE of the twenty ecosystem services provided by forests.

Clearly, under the above scenario, either timber is overvalued as a resource with respect to the life-supporting benefits obtained from a natural system left intact, or ecosystem services, as a whole, are severely undervalued.

REFERENCES

Anderson, T. University of Sydney 2006. Valuation and Registration of Land in PNG. Paper presented to IASCP Conference June 19-23, 2006.

Bennett, J. 1995. Economic Value of Recreational Use: Gibraltar Range and Dorrigo National Parks. A report prepared for the Environmental Economics Policy Unit, Environmental Policy Division, NSW National Parks and Wildlife Service.

Blackwell, B. 2005. The economic value of Australia's natural coastal assets: A preliminary estimate of the ecoservices of some of Australia's natural coastal assets. DRAFT BRIEF FOR DISCUSSION - Coastal CRC, Indooroopilly, Brisbane, Queensland, Australia

Brown, S. and A. E. Lugo, 1990. Tropical secondary forests. Journal of Tropical Ecology 6:1-32.

Castro, R. 1994. The Economics Opportunity Costs of Wildlands Conservation Areas: The Case of Costa Rica. Cambridge, Mass.: Department of Economics, Harvard University.

Chomitz, K.M., Brenes, E. and Constantino, L. 1998. Financing Environmental Services: The Costa Rican Experience and its Implications. Environmentally and

Socially Sustainable Development, Latin America and Caribbean Region, World Bank, Washington, DC.

Constitutional Law Foundation, Oregon, USA. Accessed 1/10/2008.

Curtis, I. A. 2004. Valuing ecosystem goods and services: a new approach using a surrogate market and the combination of a multiple criteria analysis and a Delphi panel to assign weights to the attributes. Ecological Economics. Vol 50, Issue 3-4: 163-194.

Curtis, I. A. 2008. Economic Approaches to the Value of Tropical Rainforest. In: Living in a Tropical Dynamic Landscape, Eds: Stork and Turton. Chapter 19. Blackwell, UK.

de Groot, R.S. 1994. Environmental Functions and the Economic Value of Natural Ecosystems. In: Investing in Natural Capital: The Ecological Economics Approach to Sustainability. Jansson, A.N., Hammer, M. and Costanza, R.A. (Eds). pp151-168. Island Press, Washington, DC.

Driml, S. 2002. Travel Cost Analysis of Recreation Value in the Wet Tropics World Heritage Area. Economic Analysis and Policy, Vol 32 No. 2 Special Issue: 11-26.

Duthy, S. 2002. Whian Whian - State Forest or National Park: Community Attitudes and Economic Values. Economic Analysis and Policy, 32 No.2. Special Issue: 91-111.

Flatley, G.W. and Bennett, J.W. 1996. Using Contingent Valuation to Determine Australian Tourists' Values for Forest Conservation in Vanuatu. Economic Analysis and Policy 26 (2): 111-127.

Goosem, M. and Turton, M. 2000. Impacts of Roads and Powerlines on the Wet Tropics World Heritage Area. A Report to the Wet Tropics Management Authority. Rainforest CRC, Cairns.

Lockwood, M. and Carberry, D. 1998. State Preference Surveys of Remnant Native Vegetation Surveys. Johnstone Centre Report No. 104. Charles Sturt University, Albury, p24.

Mellick, D. R. 2003. An Environmental Audit of the Kiunga – Aiambak Road and logging project, Western Province, Papua New Guinea. Lodged with the National Court of Papua New Guinea, Waigani, 18th March 2009

Murray, J. F. N. 1954. Principles and Practice of Valuation. Commonwealth Institute of Valuers (Inc) 3rd Ed. Sydney Australia.

Murray, J. F. N. 1967. Principles and Practice of Valuation. Commonwealth Institute of Valuers (Inc) 4th Ed. Sydney Australia.

Myers, N. 1997. The World's Forests and Their Ecosystem Services. In: Nature's Services: Societal Dependance on Natural Ecosystems (Ed G.C. Daily). Island Press, Washington, DC. USA.

Power, T. Undated. Making Land Work: Vol 2 Case Studies: Reconciling Customary Ownership and Development. 1. Incorporated Land Groups in Papua New Guinea. www.ausaid.gov.au/.../pdf/MLW_VolumeOne_CaseStudy

Ready, R. and Navrud, S. 2006. International Benefits Transfer: Methods and Validity Tests. Ecological Economics 60(2), 429-434

Roll, E. 1961. A History of Economic Thought. Faber and Faber, London, UK.

Snyder, R. Williams, D. And Peterson, G. 2003. Cultural Loss and Sense of Place in Resource Valuation: Economics, Anthropology and Indigenous Cultures. rmrs-Williams-2003. US Department of Agriculture, Forest Service.

Tobias, D. & Mendelsohn, R. 1991. Valuing Ecotourism in a Tropical Rain-Forest Reserve. Ambio 20(2): 91-93.

Vigas, T. R. 2008. Kiunga Aiambak Roadline Timber Authority Forest Loss and Environmental Damage Assessment. Lodged with the National Court of Papua New Guinea, Waigani, March 18, 2009

The Challenge of Land Based Carbon Property Rights and Native Title

By John Sheehan LFAPI
Deputy Director,
Asia Pacific Centre for Complex Real Property Rights, and Adjunct Professor with the Faculty of Design Architecture and Building, University of Technology, Sydney, and Chair of the Carbon Property Rights Committee of the NSW Division of the API.^

Most land- based sequestration of carbon will occur through vegetation (forests) growing on customary or traditional lands in the world. There is a high chance that customary and traditional landowners will experience a further wave of erosion of their land tenures arising from the global thrust to decarbonise as an offset to climate change. In Australia rising prospects for land-based carbon sequestration has placed customary and traditional tenures in direct conflict with the emerging Australian climate change mitigation agenda. This article identifies policy issues and alternative courses of action, rather than further erosion of such ancient rights.

> “costs are increasingly being borne by indigenous peoples throughout the world…

The commodification of forests to permit carbon sequestration and hence trading in the resultant carbon rights represents an emerging erosion of customary and

^ *The author gratefully acknowledges the support of the Harry Thomas Memorial Award of the Institute without which this ongoing research would not have been possible.*

traditional owners' rights and interests in many parts of the world. Property rights in biota are an important incident of many indigenous land rights, and the disregard of such ownership by nation States when creating freestanding legal rights to carbon raises the twin issues of extinguishment, and liability for compensation. As many nations move towards carbon offsets and decarbonisation, the unforeseen costs are increasingly being borne by indigenous peoples throughout the world, notably in developing nations. Arguably, this amounts to a further wave of indigenous dispossession, a seemingly neo-colonial by-product of industrialisation.

However, crucial lessons can be drawn from the recent Australian experience where a direct conflict already exists between emerging carbon legislation and the Native Title Act 1993 (Cth.), and this issue is canvassed below.

> "flora is an intrinsic part of indigenous rights and interests…

EXISTING SITUATION

Since the establishment by the Australian Federal Government of land rights in the Northern Territory under the Aboriginal Land Rights (Northern Territory) Act 1976 (Cth.), similar statutory rights have also been created in various Australian States, such as the Aboriginal Land Rights Act 1983 (NSW). Subsequently, the High Court decision in Mabo & Ors v Queensland (No 2) (1992) 175 CLR 1 (Mabo) and the enactment by the Federal Parliament of the Native Title Act 1993 (Cth.) affirmed recognition by the common law that indigenous property rights and interests existed arising from the survival of native title. Subsequent to the watershed Mabo decision, there has been further jurisprudence which greatly settled native title law such as Western Australia v Ward (2002) 191 ALR 1 (Ward) and Yorta Yorta v Victoria (2002) 194 ALR 538, which position native title as a multifarious "bundle of rights" markedly susceptible to extinguishment. There has also been a notable understanding of the ambit of the indigenous property rights and interests that may comprise a particular native title in a specific locality. It is this complexity which draws attention to the notion of indigenous property in carbon, a subset of indigenous biota property rights.

Of great importance, the High Court decision in Yanner v Eaton (1999) 201 CLR 351 revealed that indigenous property rights can exist in biota, specifically wild fauna such as crocodiles. Similarly, flora is an intrinsic part of indigenous rights and interests, and indeed management of tracts of land by traditional owners is highly sophisticated. Ross, Young and Liddle observed shortly after the enactment of the Native Title Act 1993 (Cth.) that:

[a]boriginal classification of land units, based on combinations of topography, soils and vegetation is a practical demonstration of this [traditional] ecological knowledge. These land classifications help Aboriginal people to predict the availability of different bush foods and manage them accordingly.

Further, they pointed out that:

[a]boriginal ecological knowledge is embedded in cultural explanations and symbols, a characteristic which has perhaps obscured the inherent sophistication of their understandings. It has been suggested that Aboriginal sacred sites may often have been conservation areas in which resource use was prohibited through supernatural sanctions. Food taboos similarly may have formed part of conservation strategies.

Given the strength of indigenous rights and interests in flora, the creation of freestanding property rights in carbon in vegetation arguably represent a subsequent stage in the ongoing dispossession of Australian indigenes commencing with the presence of British settler society on 26 January 1788. (Hughes 1987)

EROSION OF NATIVE TITLE

If freestanding property rights in carbon are to be crystallised out of the inchoate land property right held by the state, recognition of the prior claim by traditional and customary land holders to some or all of these new rights should occur. Should such recognition not be forthcoming as a land based carbon offsets regime is designed, will the native title law that has developed since the 1992 Mabo decision be discarded?

The answer lies in whether market freedoms and modern accountable government can achieve a balance with traditional and customary land tenures. Experience suggests that judicial recognition of ancient land ownership is yet to resonate with the actual experience of indigenous people in Australia, and indeed throughout the world. Colonial and post colonial Australian society in particular has always struggled with the issue of whether antipodean liberalism really extends to indigenous Australians. The emergence of carbon property rights in vegetation in response to decarbonisation, and broader international obligations to adapt to climate change subsequent to Australian Federal government ratification of the Kyoto Protocol in December 2007 now provides an opportunity to test the genuineness of existing recognition of indigenous land rights. Given the remarkable complexity of indigenous land rights, it is almost certain where native title is determined by the Courts to have survived colonisation, indigenous carbon property rights will also have survived in many parts of Australia. The establishment of a free-standing carbon property rights regime by the State will in many situations extinguish ab initio any underlying indigenous interests. Hence, the price

of carbon gained from sequestration in vegetation must include an allowance for compensation for the indigenous interests extinguished. The methodology for assessing this compensation is a task which is yet to be understood.

KEY POLICY ISSUES

Indigenous land rights have not ranked highly in global debates on climate change. Beyond perfunctory recognition, little interest has been expressed in the implications for customary and traditional landowners of global resource exploitation for sequestration on the scale needed to achieve significant decarbonisation. The quantity of land which will need to be given over to reforestation for the purpose of sequestering carbon from the atmosphere is currently not fully understood, however it is certain to involve many billions of hectares of land.

As the FAO World Summit on Food Security in November 2009 revealed, a balance will need to be achieved between protecting increasingly scarce arable land to ensure food security, and the anticipated demands of land-based carbon sequestration. Notwithstanding, much sequestration will still of necessity occur in developing countries with high levels of customary or traditional land tenures, and as a result the six key policy issues are:

- Genuine recognition of indigenous land rights with carbon related components to avoid the imposition of environmental costs on indigenous peoples;
- The provision of a non-price dominated carbon management environment where carbon sequestration occurs on customary or traditional lands;
- Where carbon sequestration occurs on customary or traditional lands, the regime should as much as possible be consistent with traditional or customary land management practices;
- The impact of land based sequestration on customary or traditional communities should be carefully assessed in order for support to occur prior and subsequent to such impact occurring;
- Preferably carbon offset trading generated from sequestration on customary or traditional lands should rest with the land owners, albeit within a national trading framework; and
- Opportunities exist for leasehold carbon sequestration on customary or traditional lands, but on terms and conditions acceptable to the landowners, gained with their genuine consent.

CONCLUSIONS

In attempting to distil any conclusions from the above discussion, the stark irony is that indigenous peoples throughout the world have probably always been aware of the value of biota, notably vegetation as an integral component of their various customary or traditional land tenures. In some countries such as Australia, judicial recognition of such incidents of native title has already occurred as in the High Court decision Yanner. However, just as indigenes seem poised to gain financial rewards for their carbon property rights and continuing time worn land management practices, the State is unwilling to recognise this component of their land rights. Comprehensive strategies are urgently needed to ensure that customary or traditional landowners are not again marginalised as industrialised nations seek carbon offsets in land-based sequestration projects.

The key policy issues listed in this article provide a framework which applies to any country with customary or traditional land ownership, and requires of the State meaningful dialogue with the customary and traditional communities who will be impacted by the carbon sequestration process. Market freedoms and modern accountable government need to achieve a balance with traditional and customary land tenures. The framework proposed in this article identifies the policy tools to achieve this aim. ■

CASES CITED

Mabo & Ors v The State of Queensland (No 2)(Mabo) (1992) 175 CLR 1

Western Australia v Ward (2002) 191 ALR 1

Yanner v Eaton (1999) 201 CLR 351

Yorta Yorta v Victoria (2002) 194 ALR 538

STATUTES CITED

Aboriginal Land Rights (Northern Territory) Act 1976 (Cth.)

Aboriginal Land Rights Act 1983 (NSW)

Native Title Act 1993 (Cth)

REFERENCES

Ross, H., Young, E., & Liddle, L. 1994 Mabo: An Inspiration for Australian Land Management Australian Journal of Environmental Management (1) 1 (July): 24-41.

Hughes, R. 1987 The Fatal Shore: A History of the Transportation of Convicts to Australia, 1878-1868 London, Collins Harvill.

New Urban Development - Looking Back to See Forward

By Claude Gruen

In a serious and thought provoking book, the significant role of urban housing policies in precipitating the Global Financial Crisis (GFC) in the USA are carefully analysed, with recommendations then made for future, safe, urban growth policies.

The author, the prominent and practising Urban Economist, Dr Claude Gruen, has taken advantage of the recent turmoil that emerged towards the end of the 2000's to document the culmination of urban policies in the USA that precipitated the financial morass called the GFC and which has led to serious impacts on most other countries.

Gruen's writing is a serious economic investigation of actions taken over the last century, in many cases well intentioned, by all levels of government, industry and home owners but which ultimately failed with huge numbers of foreclosures and financial losses of record amounts.

This is an examination of the phenomena, policies and human behavioural inputs and the resultant outcomes and results expressed in strong economic truths. Scattered throughout are personal and professional examples together with references to the key Court case outcomes that ultimately often seemed to have worked against the common good.

> "then the flutter; when it happens, becomes a flood…

Gruen essentially finds that policies designed to protect neighbourhood amenity by various exclusionary means, particularly using the planning process, effectively reduces supply below an appropriate equilibrium level with demand and, as a consequence, prices are increased beyond the incomes of those seeking to obtain positive equity in their housing. Mix this with a whole lot of other ingredients such as an economy awash with cash, banks straining to lend, teaser loans, relaxing of lending rules to enable ownership by those who cannot afford them and low interest rates, then the flutter, when it happens, becomes a flood.

Having dissected the urban economy, its developments and outcomes, adverse and otherwise, intended or not, Gruen offers 13 specific positive policies to strengthen the housing opportunity, to facilitate the creation of affordable housing across all income levels, to produce harmonious neighbourhoods and to enable and encourage closer relationships for workers to enjoy between their housing and employments.

This is a book for Australian public policy makers, planners, developers, investors and other property professionals, including academics and graduate students that provides an outstanding opportunity to understand the complex web of the urban environment and its strengths and weaknesses in a market economy. Further, issues that have and are causing pain in growth are highlighted and recommendations worthy of serious contemplation clearly explained.

While not all of the forces found in the USA are found to the same extent in Australia, the parallels far outweigh the differences.

New Urban Development by Claude Gruen is published by RUTGERS University Press, September 2010. Retail price: US$42.95 +postage. A 30% discount is currently (January 2011) available for Internet purchase: 'rutgerspress.rutgers.edu'. Search 'New Urban Development'. Add the book to your cart, then enter Discount Code 02AUTH11. Or check current Amazon offer and where you can also read the first few pages.

Maurice D. Squirrell

Associate Professor of Property (Retd)

RMITUniversity

Photo J.Leslie

Modelling Residential Property Values based on Regression and Spatial Analysis

Mark McLoughlan
AAPI, MAppSci (RMIT)
markmcloughlan@iinet.net.au

Colin Arrowsmith
School of Mathematical and Geospatial Sciences, RMIT University
colin.arrowsmith@rmit.edu.au

This paper is a synopsis of the dissertation submitted by the first author for the partial fulfilment of the Masters of Applied Science degree at RMIT in 2008.

Nowadays, in the highly competitive finance market, banks, other financial providers and brokers demand cheap, readily accessible, sufficiently accurate and virtually instant valuation assessments. Traditional assessment approaches are under pressure, due substantially to inherent human subjectivity.

There are achievable improvements to the valuation of residential property which would narrow the gap between traditional valuation approaches and recent attempts at stream-lining valuations. Embracing technology and apposite data to calculate the market value of residential property is a key to providing objectivity in the valuation process.

This paper provides a summary of research into assessment of property valuations by qualitative measures. The study provides encouraging signs for those who subscribe to the view that regression and supporting technology are capable of supporting the valuer.

BACKGROUND

Research, mainly from the USA, indicates that the valuer is the determiner of the variables or at least their perceptions of the variables (Waller 1999). Australia has also used the valuer to determine / analyse the variables.

Notably, there is a dearth of information on what the owner thinks is important in the assessment of property (Daly et al., 2003).

This paper presents a research project that attempts to develop a model for predicting residential property values. This was achieved through qualitative responses to a questionnaire of 30 participants. Participants were recruited from a list of data from recent property purchasers. Participants' questionnaires were analysed to ascertain relevant variables and their weightings and combined with selected geographic information and spatial analyses using Geographic Information Systems (GIS). This project was to determine the value of residential property to a level which provided an acceptable range of values. The 'acceptable margin for error' considered appropriate in the research was 10%, a figure used by the Victorian courts (Crosby et al.,1997).

In the current highly competitive finance and investment market, banks, other financial providers and brokers demand cheap, readily accessible, sufficiently accurate and virtually instant valuation assessments. In Australia the Commonwealth Bank is a leader in this push^. Traditional assessment approaches are under pressure, not the least concern being inherent human subjectivity.

It can be argued that improvements to the valuation of residential property can be made that narrow the gap between the traditional valuation approaches, and more recent attempts at stream-lining the valuation of residential property, with an appropriate alternative approach. This approach should embrace available technology and apposite data to calculate the market value of residential property efficiently, at minimum cost and with sufficient accuracy. The alternative approach should meet with interest from the Real Estate Institute of Victoria that is often criticised because its members misquote the market value depending on circumstances.

Valuation traditionally has relied on matters of opinion and subjective judgement that arguably align to art. In this modern age where technology has advanced considerably and is readily available at relatively low cost, more scientific valuation models should add a new dimension to the valuation process. It should allow substantially greater objectivity and should be more reliable. An important proviso to this is access to acceptable data quality.

Historically, valuers who had limited exposure to modern technology, can be criticised for viewing the valuation process as an 'art' where skill and opinion are at the core of the valuation process. Whereas, it can be argued that the young professionals of the valuation industry see technology as commonplace. They are imbued with a more scientific approach, including automated valuation methods.

The most common valuation methodology in the past, and still relevant in many instances today - especially for residential property, is the Direct Comparison Approach. When a valuer is armed with adequate facts about comparable properties, they should be able to make the appropriate adjustments that produce suitable and accurate valuations (Whipple, 1991).

One criticism levelled at this traditional approach (Kummerow, 2003) involves the adjustments made for comparative properties. There is the element of subjectivity (albeit based on the valuer's experience and knowledge) introduced in the final assessment.

In the broader sense, critics of traditional valuation approaches argue that there are fundamental flaws in the approaches adopted (Vandell, 1991).

Another critic is Gilbertson (2002) who correctly highlights a possible flaw of the traditional valuation approach is that valuers come under pressure from their instructing party to "move the number in a particular direction". The suggestion that valuers are 'beholden to the power of the purse' can be viewed as a strong argument against the use of traditional methodologies that directly involve the valuer and their opinions. A more plausible proposition is that there should be at least some objective scrutiny or test of the validity of assessments arrived at using orthodox methods.

Kummerow advocates the use of computer assisted assessments and states that "different valuers can and do come to different conclusions". He cites Vandell (ibid) in support of the argument that there is inherent and undesirable subjectivity in the traditional approach that beckons a better approach. Vandell argues that the comparative approach to valuation is "quite ad hoc" and, "At each step of this [comparative sales analysis] process, the analyst must make decisions" and that this act allows "bias to enter".

Valuers are not 'price setters' but analysts of the property market, who in turn measure and infer fair price, or value. To analyse property effectively valuers need to source market data and to identify the relevant variables that have a bearing on fair price. It is not only the variables, but the weightings for those variables, and thus their influence that is considered important.

The 'price setters' of course are the buyers.

The buyers' considerations should therefore be central to any debate

^ *Virtual valuers versus human touch. Sydney Morning Herald 2/10/2004.*

on the value of residential property because they 'sign the cheque' and are the collective masters. It follows that if valuers perceive characteristics that are different to, or inconsistent with, the level-headed and informed buyers then they are, prima facie, 'out of touch' with the principal players' perceptions of 'hedonic' characteristics that contribute value to a property. "The theory of hedonic pricing is that people's willingness to pay reflects their valuation of bundles of hedonic characteristics, rather than a single one-dimensional generic good." (Kummerow).

Adair et al. (1995) demonstrates that buyers and valuers differ markedly on their perception of the importance of variables and their rankings in the residential market. He concludes, "there are statistically significant differences between buyers and valuers across the salient variables".

There is a paucity of research about buyers' behaviour, including the time taken for consideration of purchase. Rossini (1998) is an exception and provides some insight into buyers' conduct in Adelaide. His assessment of buyer behaviour, including buyer preferences, serves to augment the view that buyers are well informed. They devote considerable time before committing to a residential property purchase and are overwhelmingly satisfied with their final purchase price. It follows that this is likely to represent fair market value.

Interesting findings from Rossini's survey of 2,000 house purchasers include: at least 10% considered only 5 to 10 properties and about 50% inspected at least 50 properties prior to purchase. Most property purchasers looked at properties in one suburb or an adjoining suburb which suggests that buyers are not only focused on specific areas but are also likely to have honed their knowledge of the market and what influences it at that point in time. A chart of "Time Spent Looking for this House" purchase in different areas of Adelaide indicates that on average 15% of purchasers spend one year or more looking for property, whilst 27% spend less than one month. By far the majority, about 58% spend between one month and 11 months looking for property with the typical time spent being 3.5 months. This information, when coupled with the median number of at least 50 inspections, leads to the rational conclusion that prospective buyers should have a good understanding of what is on offer in the market about that time. In respect to the buyers' perception of price - 70% considered they had purchased at a fair price, with 20% believing they had acquired a bargain and only 10% feeling they had paid too much. This anecdotal feedback amounts to a high level of

perceived satisfaction and adds to the hypothesis that buyers have at least a reasonable knowledge of the residential property market.

The research for this study was conceived from this perspective. Particular emphasis was directed to the buyers and their perceptions of significant property attributes.

The research objective was to develop a model for predicting residential property values using regression analysis that would involve research of property purchasers to ascertain relevant variables and their weightings with germane information from spatial analysis using GIS. The model, to be acceptable, would need to determine the value of residential property to a level which provides an acceptable range of values.

^Although the research is pertinent to Bendigo it is could be extended to Melbourne or other capital cities in Australia if the model was acceptable.

The regression model, to be statistically valid, needs to meet certain tests which include those as discussed in the Janssen (2003) Adelaide study. The author developed a regression model and claims that "The equation as a whole explained some 91% [and 87% using an alternative] of the observed variation in price". It is understandably stated that this is "highly significant" – with the P value being close to 0. A similar impressive result in the Kennington study would be a most satisfying outcome.

Another measure of the regression analysis validity was the analysis of residuals when comparing the actual price paid by purchasers versus the predicted values derived from the preferred regression model. Variance should not be greater than an absolute mean of 10%.

The simple form of the regression equation in the model is:

$Y = B_0 \quad (B_1 X_1)$

where Y = the dependent variable of 'fair price'

(X_1) = the independent variable

(B_1) = the variable weighting

B_0 is the median price or a ratio of the median prices when considering annual temporal movements

and $(B_1 X_1)$ is the variable times the variable weighting

An extension of the equation is $Y = B_0 \quad (B_1 X_1 \quad + B_2 X_2 \quad + B_n X_n)$

Where X_n is the nth variable and B_n is the nth variable weighting (if any).

The City of Greater Bendigo, one of the regional centres of Victoria as chosen for the research. It has a population of approximately 98,000^.

The confined, predominately residential suburb of Kennington presented as a convenient study area with about 2,500 households that equated to 6% of the city's population.

The research focused on the perceptions of the recent property purchasers in the area and the justification for their particular purchase.

It was designed to ascertain the variables that were deemed important to recent purchasers in the contribution to residential property price. It was considered essential to approach a sample of buyers to determine the relevant information. The approach was substantially based on qualitative research. A questionnaire specifically designed for this purpose was the centrepiece.

The aim of the questionnaire was to elicit valid and sufficiently accurate responses from participants who had recently purchased property in Kennington. The questionnaire had a range of options available, was simply explained and designed for ease of completion. The questions required no text responses, just ordinal responses on a Likert scale.

The Likert scale was chosen as the measurement in the questionnaire because of its ease of development, administration and calculation of responses. The intention was to provide the participants with a sufficient range of options to record their opinions as accurately as possible. A scale of 9 to zero was presented in a clear demarcation of pairs, with corresponding descriptors as a method of discerning opinions' weightings. These descriptors were: 'Most Important'; 'Significant'; 'A Consideration'; 'Of Little Significance'; 'Irrelevant' and 'Not

Table 1: What influenced your decision to purchase this particular site in Kennington?

	Exceptional		Very good		Good		Average		Fair		N/A
	9	8	7	6	5	4	1	3	1	0	
Building aspect/orientation to maximise light	0	0	0	0	0	0	0	0	0	0	0
Size of dwelling	0	0	0	0	0	0	0	0	0	0	0
Age of dwelling	0	0	0	0	0	0	0	0	0	0	0
Heritage factors	0	0	0	0	0	0	0	0	0	0	0
Ambience/appeal ('wow' factor)	0	0	0	0	0	0	0	0	0	0	0

Applicable'. An over-riding motivation for the ten point scale choice was to avoid the simplistic response of participants choosing the middle point in an odd number of responses.

The list of variables developed (as a questionnaire) was pre-tested on a group of ten residential property owners in Bendigo, including six in the Kennington study area. The pilot study was conducted several weeks before the final questionnaire was distributed. The feedback from participants provided additional insights into relevant variables as they pertained to each individual's circumstances. This trial indicated that further refinements to some questions were required and other questions provided no data for the regression equation and thus were deleted.

It should be noted that the date of purchase, contract date and other temporal measurements were not considered as relevant variables, as price was determined on the basis of a current date that was relevant for the time frame of 2.5 years (between January 2006 and August 2008).

Table 1 is an excerpt from page 2 of the questionnaire and illustrates its structure and a sample of variables for participant rating. The final questionnaire given to participants after having been pilot tested, consisted of 174 statements. The aim was to cover a high percentage of possible reasons/considerations for purchase and to elicit responses that would reasonably equate to the weightings participants placed on each variable.

WHAT INFLUENCED YOUR DECISION TO PURCHASE THIS PARTICULAR SITE IN KENNINGTON?

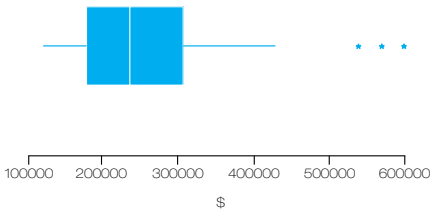
There was no personal engagement initiated by the researcher to avoid any suggestion of coercion and to maintain anonymity. The questionnaires were hand delivered to mail boxes, and included a stamped, self-addressed envelope for the participant to return to the researcher. The return of the questionnaire was deemed as providing consent. The reason for the survey was explained in a plain language statement letter accompanying the questionnaire. The participants for the questionnaire were selected from the complete list of available sales data for detached residential properties in Kennington for the period 2006 to 2008. There were 144 in this category, but only 30 potential participants returned their questionnaires complete. Since this was deemed a relatively small number there was no need to filter.

It was proposed that temporal analysis would be limited to a ratio of mean annual prices for the typical residential property in Kennington that have detached dwellings. The research did not utilise repeat sales of the same property as a basis for price change in subsequent times.

If the regression equation met the broad objectives then the median price would be adopted as the basis of any temporal change to the wider residential market.

Figure 1 provides a summary of residential sale prices in Bendigo for 2004 (provided by the City of Greater Bendigo) and it illustrates the medians. The median price was $236,000.

Figure 1: Boxplot of residential prices in Kennington - 2004



There was additional data considered to supplement the questionnaires. This included: the purchase price of the properties (Land Data Victoria); land area; building size; type and approximate age using Google Maps/View (Figure 2).

Some of this data was verified by 'drive by' inspection. Google Maps was used to complete the calculation of the building block area.

The boundaries of the object were digitised to form the required polygon. The result was displayed automatically in acres. Methods for calculating land area, and building area, are illustrated in figure 2 & 2a. The conversions to metric are completed manually.

Note (Figure 2a) that in the dwelling area calculation 162 ± is a 12.5% error. This error augurs against the aim of the research that is to create an acceptable model that predicts the market value of residential property.

The data captured from the questionnaires, after entry into a spreadsheet, was averaged according to variable type and then sorted from the highest ('Most Significant'') to lowest ('Irrelevant'). Figure 4 shows part of Page 1 of the spreadsheet after sorting according to the first 20 questions in section 2.

The next stage involved questions were ranked according to the mean average value for the questions from the responses. Key findings were that the most important four attributes according to property purchasers related directly to the dwelling itself – its condition, quality, size and the number of bedrooms and the size of the block was ranked fifth.

A relatively minor aspect of 'storage' was ranked ninth and regarded as significant, whilst traffic noise was thirteenth (above heating and cooling). The garden size, quality and trees were 21st and 22nd respectively. Interestingly, the issues of 'proximity to… CBD… supermarket …employment' rated the lowest of all at 62 to 64 rankings. This could be explained by the fact that the 3 or 4 kilometres to the CBD is regarded as walking/cycling distance. The Bendigo public transport system is limited and possibly most people rely on cars anyway.

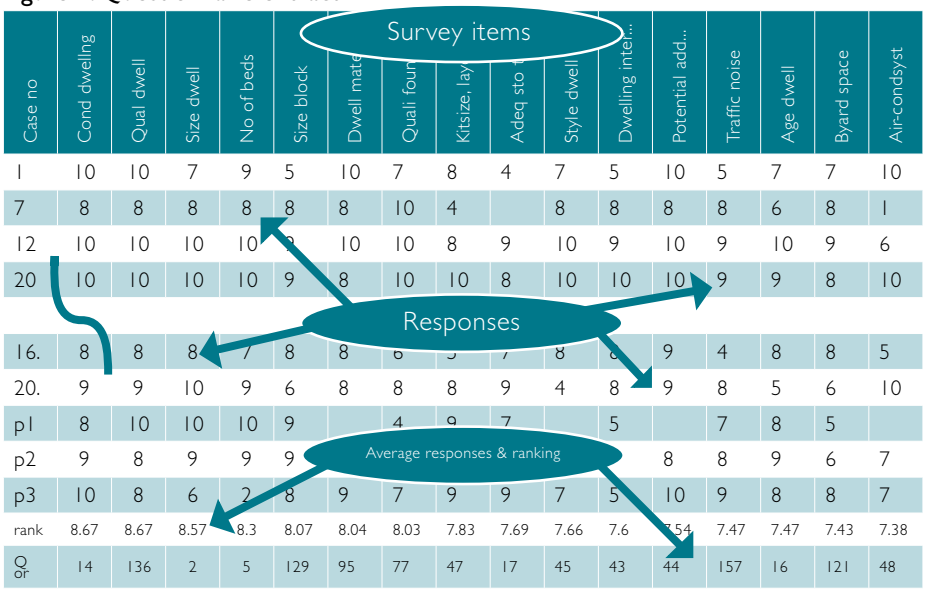
Figure 2: Google maps

Figure 2a

Figure 3: Answers with 0.7 or above

	Cond of dwell	Qual of dwell	Size of dwell	No bedrms	Size of block	Dwell mat'al	Quality found's	Kitchen size layout, quality
Condition of dwelling	1	0.845	0.523	0.07	0.447	0.814	0.391	0.446
Quality of dwelling	0.845	1	0.618	0.227	0.392	0.586	0.311	0.507
Size of dwelling	0.523	0.618	1	0.489	0.678	0.455	0.344	0.426
Number of bedrooms	0.07	0.227	0.489	1	0.355	0.099	0.045	0.007
Size of block	0.447	0.392	0.678	0.355	1	0.324	0.366	0.388
Dwell material	0.814	0.586	0.455	0.099	0.324	1	0.347	0.143
Quality foundations	0.391	0.311	0.344	0.045	0.366	0.347	1	0.187
Kitchen size, layout, quality	0.446	0.507	0.426	0.007	0.388	0.143	0.187	1
Adequate storage - house	0.217	0.158	0.362	-0.014	0.159	0.131	0.246	0.364
Age of dwelling	0.549	0.497	0.473	0.151	0.463	0.36	0.055	0.455
Backyard space	0.568	0.474	0.49	0.16	0.503	0.486	0.498	0.087
Air-conditioning system	0.152	0.252	0.108	-0.017	0.012	-0.158	0.117	0.715

Figure 4: Questionnaire extract



Case no	Cond dwelling	Qual dwell	Size dwell	No of beds	Size block	Dwell mat'g	Quali foun	Kitsize, lay	Adeq sto	Style dwell	Dwelling intel...	Potential add...	Traffic noise	Age dwell	Byard space	Air-condsyst
1	10	10	7	9	5	10	7	8	4	7	5	10	5	7	7	10
7	8	8	8	8	8	8	10	4		8	8	8	8	6	8	1
12	10	10	10	10		10	10	8	9	10	9	10	9	10	9	6
20	10	10	10	10	9	8	10	10	8	10	10	10	9	9	8	10
16.	8	8	8	7	8	8	8			8		9	4	8	8	5
20.	9	9	10	9	6	8	8	8	9	4	8	9	8	5	6	10
p1	8	10	10	10	9		4	9	7		5		7	8	5	
p2	9	8	9	9	9							8	8	9	6	7
p3	10	8	6	2	8	9	7	9	9	7	5	10	9	8	8	7
rank	8.67	8.67	8.57	8.3	8.07	8.04	8.03	7.83	7.69	7.66	7.6	7.54	7.47	7.47	7.43	7.38
Qor	14	136	2	5	129	95	77	47	17	45	43	44	157	16	121	48

THE CORRELATION PROCESS

As there were a large number of variables and many fewer observations, factor analysis was not possible. It was decided to form a correlation matrix in order to limit the number of variables by combining together those which showed significant correlation scores, of 0.7 and above. The matrix was very large (72 pages) and an extract of part page 1 is shown in figure 3 to demonstrate the correlation process. There were three correlations in this extract of the top ranked variables that were 0.7 + and they were: condition of dwelling with quality of dwelling (0.845); condition of dwelling with dwelling material (0.814) and backyard space with kitchen size, layout and quality (0.715). (See Figure 4)

VARIABLES THAT EXHIBITED HIGH CORRELATION

To determine the variables that exhibited a correlation of 0.7 or higher a table was developed – an extract follows. It was derived from the large matrix, as per the extract that appears in the subsequent table. It was considered that below 0.7 was regarded as having insufficient correlation.

Parameters: Correlations including 0.7 and above included and only the top 26 variables considered.

The result is as follows with 20 variables fitting the criteria. Six of the top 26 variables revealed correlation of less than 0.7 and these did not appear in the table. (See Figure 5)

The extract highlights that a high correlation exits for example between "Condition of Dwelling" and "Quality of dwelling", "Dwelling material", "Traffic noise" and "Space from next dwelling".

DERIVING COMPONENTS

The next stage was an attempt to combine the variables into components that had less correlation to each other. The components would have some common attribute and would exhibit relatively high correlation. It would ideally involve the top 64 variables.

The process involved commencing with the most highly ranked variables and then allocating each to a component designated by the figure one. When there was no correlation or common attribute a new component was created.

The results with the components named were: Quality, Size b (size of block), Size d (size of dwelling), Facilities, Design, Potential and Ambience.

DERIVING COMPONENTS VALUES FOR EACH OBSERVATION

The values for each of the components for each survey were calculated by adding together the value to the responses multiplied by the value of the r^2 (the coefficient of determination) for each variable compared to the highest ranked variable in the component. The r^2 value was taken from the correlation matrix.

Figure 5: Top 5 variables

Top 5 of 26 Variables	Variables with correlation 0.7 and above			
Condition of dwelling	Quality of dwelling	Dwelling material	Traffic noise	Space from next dwelling
Quality of dwelling	Condition of dwelling	Size of dwelling		
Size of dwelling	Quality of dwelling	Size of block	Space from next dwelling	
Size of block	Size of dwelling			
Dwelling material	Condition of dwelling	Traffic noise	Space from next dwelling	

In order to present the calculated values in a way that looked similar to the original data and comparable to each other each figure was adjusted to have a mean of 5 and a standard deviation of 5.

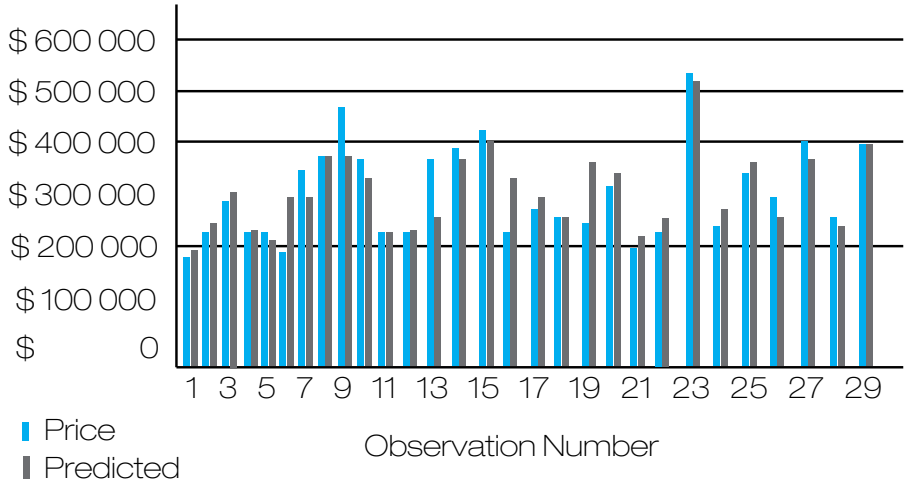
The final model resulted in P values for both components of Design and Building area were well within the 95% confidence level. This was the first model of several that passed this significance test.

The objective for the research was to develop a model that could predict, at a reasonable level of confidence, the fair price of any residential property within an absolute value of 10%. While the final result of 12.9% is outside the desired margin (of 10%) the model has achieved the best results and is arguably within proximity to the acceptable research objective.

The tendency for comparability (of actual property prices to the model) is shown in the 'actual' versus 'predicted' $ price chart (Figure 6). Despite this there remained an unacceptable number of extreme outliers.

The extreme outliers are highlighted in Figure 7 via bars that break the heavy broken horizontal line. The 10% absolute residual line is highlighted by the shorter broken line. There were 6 in excess of 20% which is one fifth of the observations.

Figure 6: Actual Vs predicted $ price



THE REGRESSION EQUATION

Generally expressed the final regression equation is:
Price (in $) = 4740 design + 1516 building area.

The coefficient of determination indicated that the model fits well – i.e. 94% of the calculated price can be explained by the variation in design and building area.

The full manual calculations can be shown using questionnaire one as an example, which is participant one in the Kennington study.

The score is derived from the values the survey respondent gave to the categories in 'design' each multiplied by their weighting factor.

The standardised formula for 'design' = 5 x (score -19) divided by 4.86 + 5

Where 19 is the mean of the original surveys for 'design' and 4.86 is the standard deviation of the original surveys.

Multiplying by 5 changes the standard deviation to 5 and adding 5 makes the average 5. This provides compatibility for each of the components.

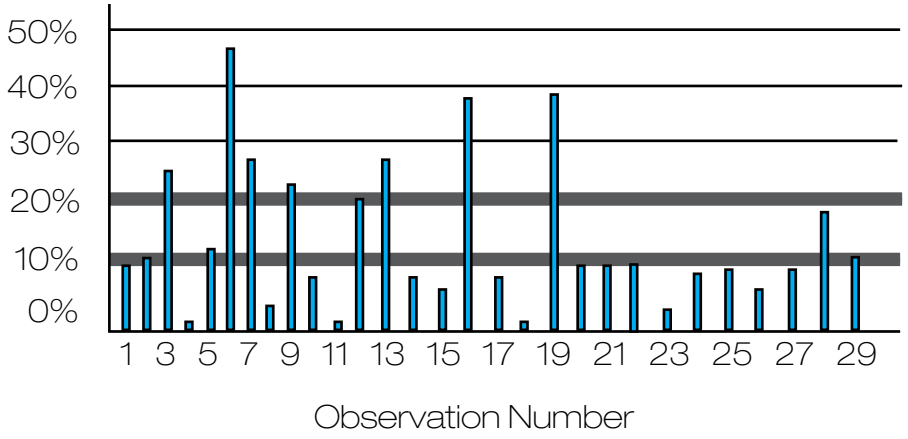
The first calculation, being case one, is:

5 x 1 (dwelling internal design) + 10 x 0.1 (heating system) + 8 x 0.23 (shrubs) + 6 x 0.26 (dwelling level) + 0 x 0.15 (open plan living) + 5x 0.31 (dwelling ceiling height) +7 x 0.17 (internal finishes) + 8 x 0.21 (study) + 5 x 0.41 (condition paintwork) = 15.87

The first of each of these pairs of numbers is the response from survey number 1. The second number is the value of r^2 from the original survey. Where r is the correlation between dwelling internal design and the other items listed.

The second calculation is a substitution of 15.87 into the formula.

Figure 7: Final model - outliners highlighted



So 5 times (15.87 – 19) / 4.86 + 5
= 1.77

Design is 4740 x 1.77 =8390

Building is 1516 x 121
(this taken from the area measurement of the dwelling in case one)
= 183436

$191,826

The final step is to add the temporal dimension, which is: Price = Median price / 236000 x (4740 x design + 1516 x building area). As the median price in 2008 is $236,000 there is no change to the predicted price as the ratio is 1.

In this instance the actual sale price was $175,000 and as the predicted price, via the model, is within 10%. The outcome is encouraging.

CONCLUSION

The regression model, with an adjusted r^2 of 94%, indicates that it has validity. However, there were problems on analysis substantially due to the wide and unacceptable prediction intervals. In addition, there were several outliers in the model that caused concern. Notwithstanding this, the final model provided a mean absolute value prediction of 12.9% which is arguably close to the 10% margin of error postulated as acceptable in the research objectives.

The final valuation model developed is considered feasible to use as an Automated Valuation Model employing regression, for the Kennington study area that would predict acceptable values.

The first objective of this research was to establish what variables add value to a residential property, determined by engaging recent property purchasers, and what weightings do such variables carry. The most important variables for the participants were determined. This was done by ranking the top 64 variables (out of 158 listed possibilities in the main part of the questionnaire Section 2) from the most important to the least.

The minimum sample size of thirty was achieved; and the variables and weightings identified. The most significant variables were: 'Condition of dwelling'; 'Quality of dwelling'; 'Size of dwelling'; 'Number of bedrooms' and 'Size of block'. Components were deduced as factor analysis not possible due to sample size and excessive number of variables.

An Automated Valuation Model was developed utilising the information about the important variables; plus the measured areas of the building site and the dwelling. The use of Google Maps to determine areas of land and buildings would be available to an everyday web user. This complies with the scope of the research that it should be available to anyone with the appropriate data.

The Google maps utilised in the research, and readily accessible by the public via the Internet, provided a spatial dimension to the model to allow the calculation of both block size and dwelling size. However, the digitized polygons provided accuracy only to within 40 square metres. This was significant, especially in the calculation of dwelling area.

The temporal resolution in the model was addressed by reference to the median price of residential properties in the study area. Any annual change in the median price as published by Land Data Victoria would be reflected in the model in the form of a ratio.

An ultimate objective of the project was to determine the value of residential property to a level which provides an acceptable range of values that may be utilised readily via the Internet at minimal cost. This tool, supported by a database, could be used by home owners, buyers and sellers, valuers, banks, local councils and other interested parties.

The positive results of the research indicate the unique approach, using the owners' insights as the primary focus for research purposes, is innovative and informed. The objective is certainly achievable, in the view of the researcher, considering the informative data gained and trends illustrated.

Modifications to the model, particularly a demonstrably larger number of participants, would enhance the results.

LIMITATIONS

The questionnaire was too lengthy with an excessive number of variables. It required more thorough development with the emphases on succinct, targeted variables; unambiguous wording and scope for explanations and clarification. The latter should provide scope for the researcher and assistants with the requisite skills to engage with but not coerce participants.

There are considerable doubts about the adequacy of the sample size, despite the researcher's surprise that the final model came close to producing an acceptable outcome.

In retrospect, the research project, could be viewed as an exploratory study due to its limitations.

The Automated Valuation Model produced was encouraging. However, there were issues with data quality that rendered it less than acceptable as a reliable predictor of residential property values in the study area. There is no reason why the approach cannot be adopted for a wider residential market, providing there is a substantially larger sample and a more targeted set of variables that should not exceed fifty. This would necessitate a sample size of 10:1, or about 500, to enable more robust calculations, including factor analysis.

The writer contends the research has set up the possibility for improved research that would employ factor analysis using the top rated variables. These are defined by the correlation matrix created in this research and could form the basis of the study. As provocatively stated by Hair et al. (1995) the researcher should derive factors 'with little generalisability… [and they] may do this both by employing the most parsimonious set of variables, guided by …practical considerations, and … obtaining an adequate sample size for the number of variables examined.'

It can be stated with confidence, based on the research summaries in this paper, that, given adequate resources including a well designed questionnaire and a sufficient sample size, a robust, reliable and valid model is possible.

REFERENCE LIST

Adair, A., Berry, J., & McGreal, S. (1995). Valuation of residential property: analysis of participant behaviour. Journal of Property Valuation and Investment, 14(1), 14.

Crosby, N., Lavers, A., & Murdoch, J. (1997). Property Valuation and "margin of error". Cutting Edge 1997, from http://www.rics.org/NR/rdonlyres/6BEA5B0E-58A8-44EB-80B0-5BAFD6842C16/0/property_valuation_variation_and_the_margin_of_error_19970101.pdf

Daly, J., Gronow, S., Jenkins, D., & Plimmer, F. (2003). Consumer behaviour in the valuation of residential property: A comparative study in the UK, Ireland and Australia. Property Management, 21(5), 295-314.

Gilbertson, B. (2002). Valuation or appraisal: an art or a science? . Australian Property Journal, 37(1), 11-13.

Hair, F.J., Anderson, R.E., Tatham, R.L., & Black, C.W. (1995). Multivariate Data Analysis (Fourth ed.). New Jersey: Prentice Hall.

Janssen, C.T. L. (2003). Hedonic estimation of income mulitpliers. Property Management. Bradford:, 21(5).

Kummerow, M. (2003). Theory For Real Estate Valuation: An Alternative Way To Teach Real Estate Price Estimation Methods. Paper presented at the Proceedings of the PRRES Conference

Rossini, P. (1998, 19-21 Jan 1998). Assessing Buyer Search Behaviour for Residential House Purchasers in Adelaide Paper presented at the Fourth Annual Pacific-Rim Real Estate Society Conference, Perth.

Vandell, K. D. (1991). Optimal Comparable Selection and Weighting in Real Property Valuation. Journal of the American Real Estate & Urban Economics Association, 19(2), 27.

Waller, B. D. (1999). The impact of AVMs on the appraisal industry. Appraisal Journal, 67(3), 6.

Whipple, R. T. M. (1991). Valuations: A Problem-Solving Imperative. Journal of Property Valuation and Investment, 9(4), 325-343.

PROPERTY INSTITUTE™ Professional Pathways

PROPERTY INSTITUTE OF NEW ZEALAND INC.

propertyelearning.co.nz

Turning Professionals into Leaders

The propertyelearning.co.nz website has been developed to allow members to enroll in online learning courses offered by the Property Institute of New Zealand. It also provides member access to professional development materials.

This site has been developed to allow members to enroll in different online learning courses offered by the Property Institute of New Zealand. It also provides access to other professional development materials.

property.org.nz

Professional Pathways

The Professional Pathways Programme was developed to aid graduate or provisional members to become full members and obtain registration in one or more professional communities. It provides a link between graduate theoretical knowledge and professional applied knowledge required to obtain full membership of the Property Institute and registration in the different communities.

The Pathways will also provide education pathways for existing members to become registered professionals in different professional communities.

For more information go to:

propertyelearning.co.nz Or

property.org.nz/professionalpathways

Sustainability, Universal Access and the Premises Standards

Robert Knott

This paper was provided by the Australian Institute of Architects National Access Work Group which was set up in July 1998. Reporting to National Practice Committee, the group comprises representatives from all States and Territories Chapters together with representatives of the Australian Institute of Landscape Architects, the Australian Property Institute and the Association of Consultants in Access Australia; meeting quarterly by teleconference they provide coordinated practice guidance, on matters related to Access to Premises, to the various organisations members.

Architect Victoria Spring 2010 Edition dealt with sustainability and referred to the capability of Australian architects to contribute to the principles of ecological sustainability. Achievement or otherwise of this will profoundly affect future generations and will only be possible by co-ordinated universal action. The interrelation of all factors means it cannot be dealt with by any individual sector within the world community.

Lester Brown founder of the Worldwatch Institute is quoted as saying: "A sustainable world society is one that satisfies its needs without diminishing the prospects of future generations"

Architects have a significant role in reconciling current and future human needs with a sustainable future. Their, aims and objectives and their designs have always reflected changes in public opinion, taste, developments in technology

together with the need to provide accommodation for a wide variety of occupants and functions in buildings. The most recent of these is the perceived need to design buildings that take full account of the principles of sustainability. Having said this there will always be constant basic human needs to be met.

Vitruvius' famous words: "Firmness commodity and delight" come to mind.

Firmness – has many nuances of meaning but in this case includes strength, stability and longevity.

Commodity – use of appropriate materials and a concept of 'fitness for purpose'.

Delight – 'satisfaction and aesthetic pleasure' are most apt.

> "Accessibility is an important aspect of sustainability....

All of these three qualities are compatible with global sustainability. The third is often, and, by definition, very largely an outcome of the first two; the second is the most challenging for architects. Some structures are purpose designed to house equipment and manufacturing processes with no access to the public and access for a limited number of people servicing or operating the plant and equipment housed. Most, however, are built environments with a significant human focus.

Building Regulations have developed progressively typically in response to catastrophic events such as the Great Fire in Rome in AD 64, destruction by fires such as the fire of London in 1666, and - sometimes as a result of unsafe workplaces. Regulations have been developed to provide safe environments on the basis of equity of use and to sustain the quality of human life.

The Disability (Access to Premises – Buildings) Standards 2010 (Premises Standards) due to come into operation on the First of May 2011 are no exception to this. They are the logical outcome of the operation of the Federal Disability Discrimination Act 1992 (DDA'92) which prohibits discriminatory action. It extends its scope to include the principle of dignity of individuals in their use of spaces in buildings and requires building owners and managers to provide a safe and equitable environment. It is enforceable by complaints being heard by a Federal Court. .

Most buildings serve to house the activities of people with a wide range of ages and abilities and 'fitness for purpose' is of primary importance in achieving 'satisfaction and aesthetic pleasure'

Buildings designed with sustainability in mind generally have a longer life than their occupants with the result that it is close to 100% statistically likely that, at some stage, a number of their occupants and visitors will be either temporarily or permanently disabled. Accessibility is therefore an important aspect of sustainability. When implemented correctly it allows people to be where they need to be independently, efficiently and with dignity and in doing so frees their own and others' time resource. Further it allows for building use when a transitory disability occurs and provides a less dangerous environment. Retrofitting to meet individual needs can largely be avoided and in any case suitable structural provisions should be made so that retrofitting, if required, is least costly.

The Building Code of Australia and associated Australian Standards have progressively introduced requirements to improve access but improvement in the overall level of access has been slow. There has been little evidence of a proactive approach from the building industry to fully address its responsibilities under the DDA. Use of the DDA complaints mechanism with resolution (or otherwise) on the basis of isolated legal disputes has not delivered an holistic approach to access. Systemic change has therefore not been possible as people who have been discriminated against have reportedly found the complaints and Federal Court process too daunting.

At long last the perceived need for all people, irrespective of their ability/mobility, to be able to enter and move freely in and around buildings has been codified. There are many examples of what is proposed already extant in numerous regional shopping centres and cinema complexes. In these buildings the owners and operators have seen a commercial advantage in providing the means for people to be able to enter and move freely in and around their premises. Transport infrastructure has similarly been progressively upgraded an accordance with the provisions of the Transport Standards that have been operating since October 2002.

Our communities include a huge range of people, with a wide range of abilities. Some 'disabilities' are permanent, others are temporary due to accidents, illness etc. and include such limitations as those experienced by parents with young children in pushers etc. All people have the basic human right to participate in the broadest range of social activities.

In addition to providing access through building solutions there is a need for adequate provision for wayfinding, both inherent in the design by logical flow of spatial arrangements, and by readily identifiable, clear and intelligible signage. It is incumbent upon building designers to make provision for this broad range of building occupants and visitors.

The DDA'92 in Section 32 says, simply, "It is unlawful to contravene a disability standard." Therefore to comply with Federal Law, all buildings identified in Section 2.1 of the Premises Standards which are the subject of an application for a building permit on or after 1st May 2011 must meet the Access Code, regardless of the version of the BCA

which the building surveyor uses to assess the application. It should be noted that there is no provision for a 'period of grace'.

An important aspect, which is often overlooked, in respect of the legal relationship between BCA 2011 and PS 2010, is that it is not BCA 2011 that requires compliance with PS 2010 but the Federal Act DDA'92 through PS 2010 that in Clause 2.1 (1) (b) and Clauses 2.1 (4) and 2.1 (5) requires relevant buildings to meet the Access Code, which involves compliance with BCA2011 where it is applicable.

None of the foregoing affects the right of persons who consider they have suffered discrimination on the grounds of their disability to complain about a building design. This remains enshrined in the Act but compliance with the Premises Standards will mean a complaint in respect of matters covered by the Standards cannot be upheld.

Australian Standards AS 1428.1 & AS 1428.4, both of which have been updated over a number of years, were re-published in 2009 and amended in 2010 as part of an agreement to align the technical requirements of the BCA, DDA & Australian Standards. AS 1428.4 was renumbered as AS 1428.4.1. The updated standards were altered to accommodate a wider range of the population than was included in previous editions and are now reference documents to the Access Code and the BCA.

AS1428.1 & AS1428.4.1 address the built environment; internal fitout is also covered by the DDA. AS 1428.2 which will be re-written to include furniture, internal fitout and equipment is currently on the agenda of Australian Standards to be complete within a two year time frame. While not legally referenced by legislation, the publication of this standard would provide some guidance for designers and building owners and operators. AS 1428.4.2 relating to wayfinding within buildings and AS 1428.8 Adaptable Housing are also listed for finalisation and publication within the next two years. Other standards that may be developed by Standards Australia in the future include access to the external environment. The DDA includes external as well as internal environments, as with AS 1428.2, this information will provide consistent principles for designers and building owners and managers.

Similarly to BCA 2011 and the Access to Premises Standard, principles of sustainability are progressively being enshrined in legislation – refer to BCA Section J, The Building Sustainability Index (BASIX) and the Nationwide House Energy Rating Scheme (NatHERS), an initiative of Commonwealth, State and Territory Governments through the Ministerial Council on Energy, whose enhanced sustainability provisions (NSW) are being prosecuted by organisations such as the Green Building Council.

There have been many and varied repercussions of recent very significant steps forward in both the access and the 'green' agendas. An in-depth investigation of the interrelation between these two critical social movements will no doubt be the subject of many more detailed future commentaries and investigations

The Australian Institute of Architects is progressively providing, through 'Acumen', a comprehensive guide for members; including a full range of details from the legal to practical design advice.

A guide to the Premises Standards is currently in course of preparation by the Australian Human Rights Commission and will be hopefully be available on their website by the time this is published; the address will be:

http://www.humanrights.gov.au/disability_rights/standards/PSguide.html

The Architectural profession in Australia has embraced some aspects of sustainability and now faces the challenge of providing universal access. In the words of Daniel Libeskind, "Good design should be for everyone".

Photo J.Leslie

The Valuation of Aged Care Facilities

Mark Agius

(Note: This is a final year student paper submitted for the unit titled 'MMP311 Advanced Property Valuation' at Deakin University).

The aim of this paper is to give readers a better understanding into the specialised area of the valuation of aged care facilities. General information on the aged care sector will be outlined as well as some important key terms. A brief look at the future need for aged care will be explored, followed by discussion and critical analysis of a case study valuation.

The aim of this paper is to give its readers a better understanding into the specialised area of the valuation of aged care facilities. General information on the aged care sector will be outlined as well as some important key terms. A brief look at the future need for aged care will be explored, followed by discussion and critical analysis of a case study valuation. An "aged care" facility is an establishment set up to provide the service of "aged care". Aged care refers to one or more of the following types of care, residential care, community care and flexible care. (The Australian Federal Government, Aged Care Act 1997)For the purposes of this paper "aged care" will specifically refer to residential care.

Aged care facilities can provide either high care or low care services. Low care is a level of care needs which is assessed by ACAS. People who require this level of care need accommodation services such as meals, laundry, room cleaning as well as additional help with personal care as well as nursing care if required. Low care residents can be required to pay an accommodation bond. High care is a level of care needs which is assessed by ACAS. People who require this level of care need almost complete assistance with most daily living activities. It includes accommodation services such as meals, laundry and room cleaning, as well as personal care. Medical needs are managed by nursing staff.(Aged Care Australia 2009)

The population demographic of Australia will have a larger representation of seniors (people over 65 years of age) in the future. Csesko & Reed (2009) found that the anticipated long-term supply of residential aged care facilities is estimated to meet demand between 2010 and 2011 and also between 2019 and 2020. However between these periods a large increase in the number of persons aged 65 and over will have a substantial impact on demand.

There are generally three approaches to valuing an aged care facility:

- Cost - How much it would cost to replace the facility, less the depreciated value.
- Sales Comparison - sales comparison approach takes into account what other comparable facilities and properties are selling for on the open market,
- Income - income approach bases the value of the facility on the amount of income the facility is expected to generate.

This paper takes a case study approach and discusses an acceptable approach to valuing an aged care facility. The full valuation report (less confidential details) for a 109 bed aged care facility is in appendix A. Valuing aged care facilities is complex and a relatively specialised area. Within the aged care industry there are two main types of aged care, high care and low care. Within these types of care there are variants which include extra service care, dementia specific (or dementia ward), ageing in place and respite care.

The valuation approach used in the case study is a variation of the income approach. To complete a valuation for an aged care facility a valuer must be an expert in the field of aged care and must be well versed with the factors that have the potential to effect the value and income of a facility including relevant legislation and demographics. As Australia's population ages and life expectancy extends the demand for aged care will increase as will the need for aged care facility valuers.

AGED CARE FACILITIES

An "aged care" facility is an establishment set up to provide the service of "aged care". Aged care refers to one or more of the following types of care:

- Residential care
- Community care
- Flexible care (The Australian Federal Government, Aged Care Act 1997)

For the purposes of this paper "aged care" will specifically refer to residential care. Aged care facilities can provide either high care or low care services.

- Low care is a level of care needs which is assessed by the Aged Care Assessment Service (ACAS). People who require this level of care need accommodation services such as meals, laundry, room cleaning as well as additional help with personal care as well as nursing care if required. Low care residents can be required to pay an accommodation bond. (Aged Care Australia, 2009)
- High care is a level of care needs which is assessed by the Aged Care Assessment Service (ACAS). People who require this level of care need almost complete assistance with most daily living activities. It includes accommodation services such as meals, laundry and room cleaning, as well as personal care. Medical needs are managed by nursing staff. High-level care was previously known as 'Nursing Home' care. (Aged Care Australia 2009)

In addition to the goods and services provided to low care residents, high care residents must be provided with additional items, care and services such as:

- Goods to assist with mobility
- Goods to assist with toilet and incontinence management
- More basic toiletries – such as tissues, toothpaste, denture cleaning preparations, shampoo, conditioner and talcum powder. (Aged Care Australia 2009)

When determining whether a resident is either high care or low care there are Classification Principles that ACAS use. The following are examples of the Classification Principles used:

- "A care recipient's clinical needs"
- "The assistance a care recipient requires with the activities of daily living"
- "The assistance a care recipient requires with personal care"
- "The assistance a care recipient requires with communication or sensory processes"
- "The care recipient's need for social or emotional support"(above criteria quoted from The Australian Federal Government, Aged Care Act 1997, Sec 25.2)

A facility can provide a different range of cares within high care and low care, these types of care include:

Ageing In Place

In facilities that offer both high and low levels of care, "ageing in place" is term used to describe the ability for a patient to receive increased care as time progresses within the same facility. (Aged Care Australia, 2009)

Respite Care

The term respite care refers to residential care or flexible care provided as a short term care arrangement. (The Australian Federal Government, Aged Care Act 1997)

Dementia Ward

An area of an aged care facility that is specifically designed for dementia patients. These areas are usually highly secure as dementia patients tend to wander and can be a danger to themselves. (Vincent, R 2010)

Extra Service Care

Extra Service Care enables residents to make additional payments in exchange for additional services. Residents that receive extra service care may be requested to pay an accommodation bond for either high care or low care accommodation. (Aged Care Australia 2009)

Extra service status enables the residents to enjoy a superior level of comfort and choice, through:

- "A physical environment that offers high quality personal accommodation and furnishings, and enhanced choices of recreational and communal spaces"
- "Food and meal services that offer a wide range of choice and enhanced enjoyment of the dining experience"
- "Variety and choice in lifestyle, recreational and personal services that are responsive to the changing interests and needs of residents"
- "A culture of service" (above quotations from Aged Care Australia 2009)

HISTORIC TRENDS AND THE FUTURE

The population demographic of Australia will have a larger representation of seniors (people over 65 years of age) in the future. This is a result of fertility remaining at low levels over a long period, increasing life expectancy, and the effect of the 'baby boomer' cohort moving through older age groups. (Planning For An Ageing Community 2005),

> "The proportion of people over 65 years is expected to grow from 13% as at June 2002, to one quarter of the population by 2051....

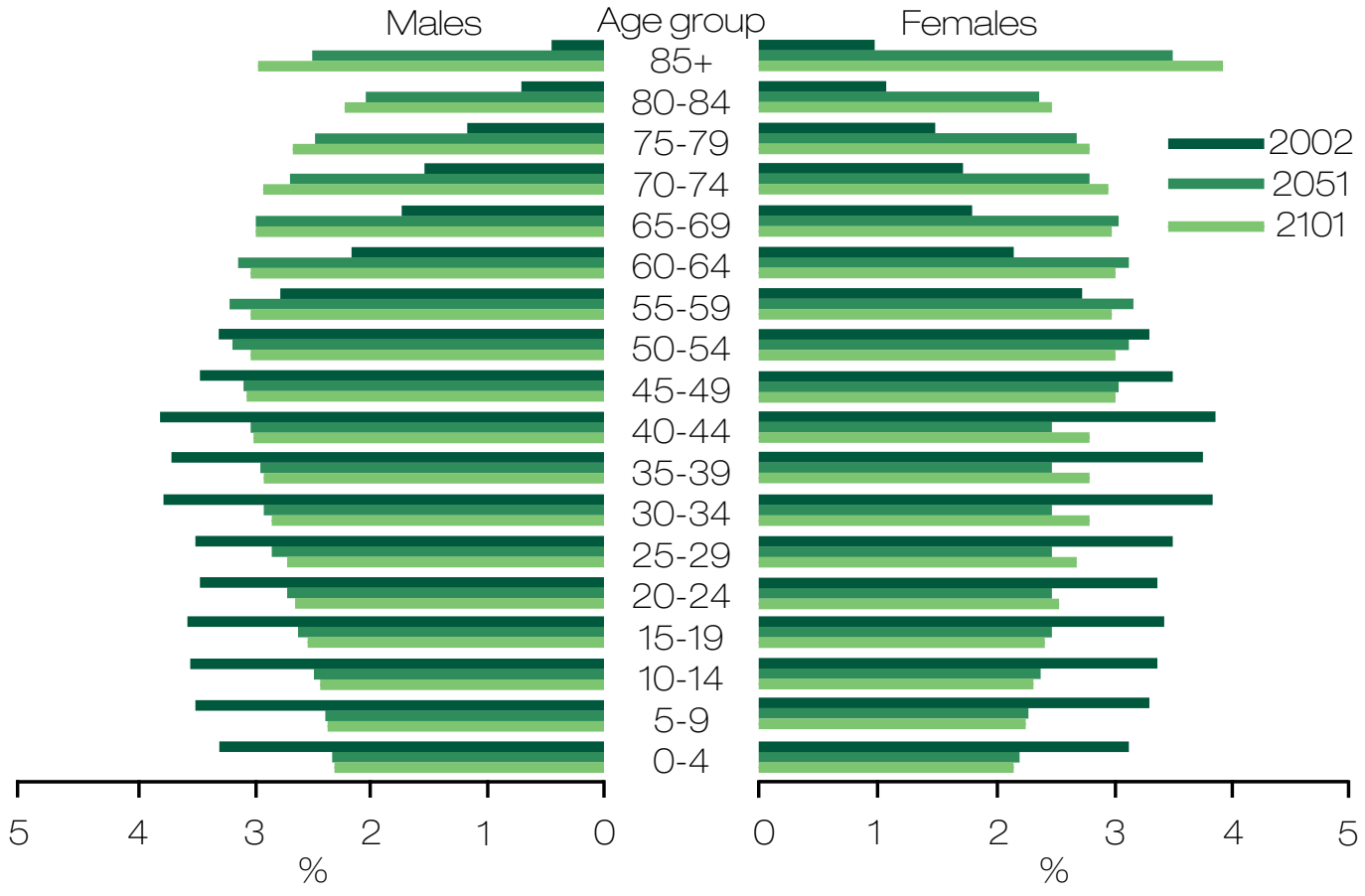
AUSTRALIA

As a result of these trends there has been an increase in the number of people over 65 years of age. It is expected that within Australia the number of people aged over 65 will grow from 2.5 million as at June 2002, to 7.1 million by 2051.(Planning For An Ageing Community 2005)

Figure 3.1: Australia's Projected Population Demographics

These trends have also contributed to the growing proportion of older people within the total population. The proportion of people over 65 years is expected to grow from 13% as at June 2002, to one quarter of the population by 2051. The proportion of people over 85 years is expected to grow from 1.4% as at June2002, to around 6% by 2051. (Planning For An Ageing Community 2005).

Figure 1: Projected population structure, as at 30 June, Series B-Australia



Source: Population Projections, Australa, 2002 to 2101, ABS.

Table 3.1: Population of older persons (x 1000)

Resident population	2002	2021	2051	2101
Males, 65 years and over	1076.7	2076.1	3362.3	3638.8
Females, 65 years and over	1358.9	2367.3	3793.9	3983.5
Males, 85 years and over	81.9	218.4	657.3	784.6
Females, 85 years and over	183.3	357.8	923.9	1036.1

Source: Population Projections, Australia, 2002 to 2101, ABS.

Table 3.2: Population of older persons (%)

Resident population	2002	2021	2051	2101
65 years and over	12.5%	19.0%	27.1%	28.9%
85 years and over	1.4%	2.5%	6.0%	6.9%

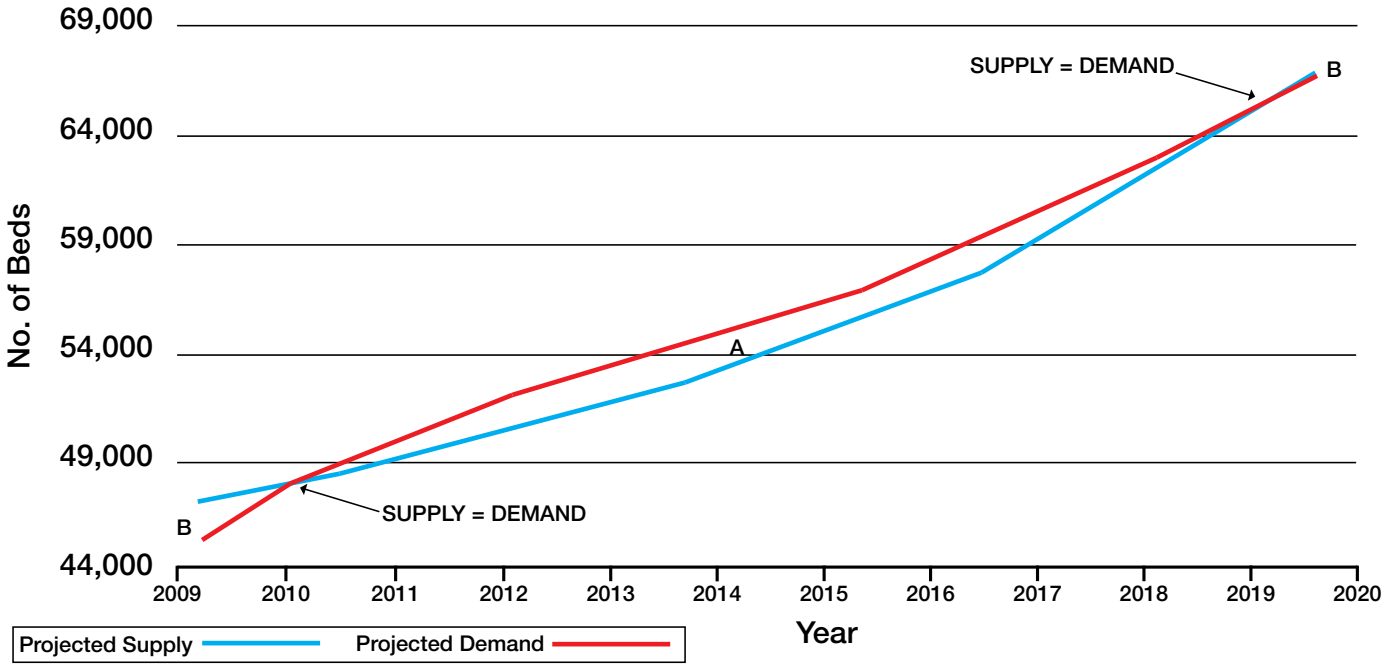
Source: Population Projections, Australia, 2002 to 2101, ABS.

Table 3.3: Proportion of resident population over 65 years (%)

State/territory	2002	2021	2051
New South Wales	13.2	19.0	26.9
Victoria	13.1	19.1	27.3
Queensland	11.8	18.5	26.8
South Australia	14.8	22.2	31.1
Western Australia	11.2	18.4	26.9
Tasmania	14.0	23.4	33.8
Northern Territory	3.9	8.1	12.1
Australian Capital Territory	8.8	16.4	23.5

Source: Population Projections, Australia, 2002 to 2101, ABS.

Figure 3.2: Supply and Demand for Aged Care Beds (2009-2020)



Source: Csesko, M & Reed, R (2009) Will residential aged care facilities meet long-term demand?

STATE AND TERRITORIES

Csesko & Reed (2009) found that the anticipated long-term supply of residential aged care facilities is estimated to meet demand in between 2010 and 2011and also between 2019 and 2020. However, in between these periods a large increase in the number of person aged 65 and over will have a substantial impact on demand (demonstrated in Figure 3.2), as a result of the "baby boom". This appears to be the primary factor in the rise in demand for aged care. Also, the increasing commonness of dementia is expected to impact on the demand for aged care, which again highlights a potential shortfall of accommodation.

VALUATION APPROACHES

There are generally three approaches to valuing an aged care facility:

- Cost - How much it would cost to replace the facility, less the depreciated value.
- Sales Comparison - sales comparison approach takes into account what other comparable facilities and properties are selling for on the open market,
- Income - income approach bases the value of the facility on the amount of income the facility is expected to generate.(Hogan 1979) (Patterson, D 1996)

However this paper takes a case study approach and discusses an acceptable approach to valuing an aged care facility. This is a critical review of a recent full valuation report for a 109 bed aged care facility. This specific valuation has been prepared before the completion of the facility and was prepared for the purpose of securing the loan to enable its construction. Much of the valuation is standard content however we will discuss and critically analyse the differences as well as the terms used.

EXECUTIVE SUMMARY

The executive summary gives an overview as to the content of the valuation report. It lists the valuation methods used:

- "Going Concern" "Day 1" value "as if completed" for 109 funded places
- Gross accommodation bonds
- Existing site value with approvals

LOCATION/ DEMOGRAPHICS

Location: The location of an aged care facility is important for 3 key reasons:

- Supply and Demand: Every year the Commonwealth Government though The Department of Health and Ageing release a list detailing the areas in which the demand for beds is far greater than the supply.
- Demographics
- Access

Access to an aged care facility is key in its success. A location near main roads is ideal as not only do employees and visitors need to be able to access the facility easily but ambulances, maintenance contractors, doctors and medical suppliers need access, mostly via wider roads. Close proximity to shops that include a chemist and a doctors surgery is also ideal as it makes it easier to access medication and the doctors themselves (as no doctors are on premises, only nurses)

As with a residential valuation discussion of the demographics of the area around the subject property is important. The ABS Census Table shows the primary catchment age group, senior citizens, is above the average for the state. Knowing this is important as many senior citizens prefer to move into an aged care facility that is in close proximity to their previous home. An aged care facility in an area where the residents are primarily older and will usually fill beds easier than one in an area with a younger population. This in turn incurs more income and thus a higher valuation.

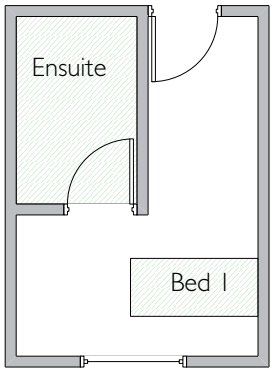
DESCRIPTION OF PROPOSED IMPROVEMENT

As in any valuation for a proposed development there is a "Description of Proposed Improvements". The table on page 9* shows the breakdown of the bed wards. Table 4.1 in this document depicts the types of rooms available, a brief description on each and the value placed on these rooms.

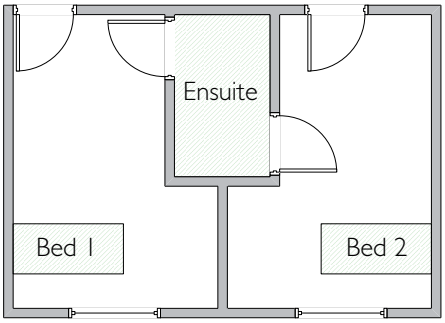
Table 4.1

Type	Description	Value
1 bed wards with private ensuites	A room that houses one resident and has an internally access only bathroom. This bathroom is only for the use of the resident of the room.	High Care: No additional value to the owner except that these types of rooms are highly sought after. Families or resident may prefer this type of room. Low Care: This type of room is viewed as a premium room and therefore will attract a higher accommodation bond.
1 bed wards with shared ensuites	A room that houses one resident and has an external access bathroom that is shared with one other resident that has a similar room.	High Care: No additional value to the owner except that these types of rooms are preferred over 2 bed wards with shared ensuites but not 1 bed wards with private ensuites. Low Care: This type of room is viewed as a medium value room and there for will attract a middle value accommodation bond.
2 bed ward with shared ensuites	A room that houses two residents and has an internally access only bathroom. This bathroom is only for the use of the residents of this room.	High Care: No additional value to the owner. Low Care: This type of room is viewed as a lower value room and there for will attract a lower value accommodation bond.

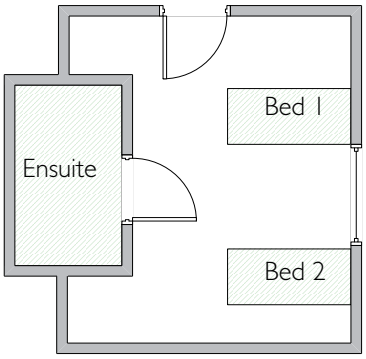
1 bed wards with private ensuites



1 bed wards with shared ensuites



2 bed wards with shared ensuites



SAMPLE FLOOR PLANS

The valuation states that there is a resident room ration of 1.22:1. This means that for every 1.22 residents there is 1 room. The minimum ratio set by The Department of Heath and Ageing's Aged Care Certification Assessment Guidelines is 1 room for every 1.5 residents. (Aged Care In Victoria 2008) (Sample plan diagrams on opposite page not to scale)

LOUNGE/DINING/ RECREATION AREAS

Under resident and staff facilities on page 10 and 11* there is the subtitle "Lounge/ Dining/Recreation Areas". This notes that "there are a number of lounge, dining and multi-purpose rooms throughout with small sitting areas in different sections of the three main levels. We also note a theatre, hairdresser, celebration and library area". These facilities add to the appeal of the facility to potential residents and their families. More detail would have added to this valuation. A breakdown of the area of dining, lounge and multipurpose rooms as well as the celebration rooms, the size and number of seats in each cinema and hair dressing area per floor would have added relevant information to the valuation report.

"CLEAN AND DIRTY UTILITY ROOMS" AND "SUPPORT AREAS"

The valuation notes the existence of clean and dirty utility areas throughout the building on each level as well as support areas. Clean utility areas include cleaners rooms, kitchenettes and medical supply rooms. Dirty utility areas mainly refers to pan rooms. Rosemary Vincent, Director of Nursing at Surrey Hills Private Nursing Home, describes a pan room as "a designated area used for the sanitizing and storage of equipment such as wash bowls, denture bowls, kidney dishes and bedpans as well as for the disposal of soiled linen and rubbish." Support areas include nurses stations, clean and dirty utility rooms and general purpose store rooms. A table depicting the number of each type of area and which floor they are located on would have been useful information to include in this valuation.

APPROVALS/STATUTORY AUTHORITIES

Commonwealth

Page 15* outlines the approval for the new centre by the Commonwealth under The Aged Care Act. Details of a facility are listed, explanation of terms/jargon are below:

An RAC Service ID/Name: A Residential Aged Care (RAC) Service ID is a number assigned by the government to aged care providers as a form of identification. Name refers to the name that the facility will function/operate under. (Agius 2010)

Approved Provider: The name of the entity that the facility belongs to. This entity must have been approved by the government to provide aged care.

No. of Places: The amount of residents the aged care provided is licensed to care for.

Concessional Ratio: The percentage of residents being cared for within the facility whose total assets are less than $93,410.40 (as at May 24th 2010). The example facility must devote 16.7% of its places to those whose assets are less than $93,410.40. (Agius 2010)

The table on page 15* breaks down the bed licenses held by the aged care provider. A bed license is a license that is either bought from, or given by, the government to an aged care provided that legally enables them to provide care. (The Australian Federal Government1997)

In the far left column of the table the acronym "ACAR" is used followed by a the year. Aged Care Approval Round (ACAR) is the round in which the government approved the license to the facility/provider. For example ACAR2007 is the Aged Care Approval Round of 2007. In this table there are two separate licenses. The license approved in 2006 is for 90 beds and the license approved in 2007 is for an additional 19 beds. Under the "Reco'd" and "Group" columns break down the license into the number of beds to be kept for different uses. These uses are priority uses only.

Group or use types:

- General - A general use bed.
- VETS - Priority use of these beds for war veterans
- NESB - Priority use of these beds for residents of non-English speaking backgrounds (Aged Care Australia 2009)

Accreditation

For an aged care facility to operate, accreditation must be passed. Accreditation is the testing of an aged care facility by the Aged Care Accreditation Agency (ACAA), each state has their own ACAA. Facilities are tested on 44 outcomes which fall under four major headings (Accreditation Overview 2010) as outlined in the table at the bottom of page 15*. If accreditation is passed the Aged Care Accreditation Agency can provide certification for operation for a maximum of three years.

INDUSTRY OVERVIEW

The industry overview provides a solid background and overview of the industry as well as the changes that have occurred. However information as to the future demand of aged care would have been a informative and useful addition to this report.

*Sample Valuation Document - Available on request.

DAILY FEES AND BONDS

Specific details regarding exact amounts in relation to government funding will be excluded from this paper. However, the basic theory is that residents are assessed and then classified. Classes depict the level of care these residents must receive. The more care a resident receives the more funding they attract. The resident (or the resident's family) pays the resident fees which are different depending on whether the resident receives a pension. The government will provide additional funding if residents are pensioners.

PAYROLL TAX

The facility valued in this report pays more than $549,996 p.a and thus has to pay payroll tax to the state government. As a fully funded facility the subject facility is entitled to receive supplements from the federal government. Supplements are money paid to the facility by the federal government in order to enable it to pay its payroll tax to the state government. Supplements are paid per resident per day. Listed on page 19* are the additional payments per resident that a facility can receive in certain circumstances (Agius2010).

COMPETITION

A breakdown of the competition and their bed places within the surrounding area provides valuable information not only to lenders but also to the client.

OCCUPANCY

Occupancy levels are important. If occupancy levels are high then the income from residents is high as well as the funding. If they are low then clearly income and funding is low. Occupancy levels effect the financial information used to produce a valuation based on the income approach.

Within the occupancy section "trading up" is referred to. This phrase is in reference to the amount of time it would take a facility to achieve a high level of occupancy. When completing a valuation, negative adjustments are made in reference to trading up as it represents potential income not received.

FINANCIAL DOCUMENTS

Page 21A* shows the budgeted profit and loss financial report of the subject facility. Page 21B* shows the projected budget of the subject facility. These documents are used in determining value and ability to repay lenders.

Under the title "Estimated Trading for Full Year Post "Trade Up" - Valuation Purposes" lies the assumptions made in assessing the projected earnings of the new facility. This figure is EBITDA (Earnings Before Interest, Tax and Depreciation and Amortization).

MARKET EVIDENCE

As with other types of valuations comparative sales can be used to try and determine value. However as stated there is no sales that can be deemed comparable. Items considered when comparing facilities include (but are not limited to) location, age, number of beds, accommodation bonds, types of care and size. Within the Market Evidence section the phrase "purpose built" is used. *Purpose built means that a facility is constructed with the intention of being an aged care facility, thus, it is not a conversion of residential homes, hospitals or other types of property. The subject facility has been constructed in accordance with Building Code 9C. Building Code 9C depicts the requirements for the construction of a facility that has both high and low care sections (Agius 2010).

REAL ESTATE OVERVIEW

The median house prices for the main catchment area have been listed in a table. This information is important as accommodation bonds are usually a very large amount of money. As many residents sell their homes before moving into an aged care facility the median house prices from the catchment area gives a good indication as to the affordability of the bonds to the local residents.

ACCOMMODATION BOND EVIDENCE

The determination of an appropriate and reasonable bond amount is done by not only taking into account via comparison of bonds that other, similar facilities are receiving and as well as the industry standard. Due to the location, age and demand of the facility the bonds had been set above the industry standard but below the highest bonds that had been received in the area.

APPROACH TO VALUATION

As page 31-33* explains the value of the facility lies in its ability to generate profit and the accommodation bonds it can receive. 40 bonds had been considered at short term value and the additional 10 were discounted as it was assumed that

*Sample Valuation Document - Available on request.

these may be bonds for "ageing in place" accommodation and thus were long term. The summary table on page 33* shows the determined value as the "going concern" "as if completed" value plus the accommodation bonds (both short term and long term). The existing site value is based on a price per place multiplied by the number of places. This price per place is derived from comparison. Comparison evidence would have been an informative inclusion.

CONCLUSION

Valuing aged care facilities is complex and a relatively specialised area. Within the aged care industry there are two main types of aged care, high care and low care. Within these types of care there are variants which include extra service care, dementia specific (or dementia ward), ageing in place and respite care.

There are generally three approaches to valuing an aged care facility:

- How much it would cost to replace the facility, less the depreciated value
- Sales comparison approach makes takes into account what other comparable facilities and properties are selling.
- Income approach bases the value of the facility on the amount of income the facility is expected to generate. (Hogan 1979) (Patterson, D 1996)

The valuation approach used in the case study is a variation of the income approach. To complete a valuation for an aged care facility a valuer must be an expert in the field of aged care and must be well versed with the factors that have the potential to effect the value and income of a facility including relevant legislation and demographics. As Australia's population ages and life expectancy extends the demand for aged care will increase as will the need for aged care facility valuers. ■

REFERENCES

Accreditation Overview (2010) Aged Care Standards and Accreditation Agency, Available: http:// www.accreditation.org.au/accreditation/accreditationoverview/ Last accessed: 27th May, 2010

Aged Care Australia (2009) The Australia Government: Department of Heath and Ageing, Available: http://www.agedcareaustralia.gov.au/internet/agedcare/publishing.nsf/content/high-level+care Last accessed: 19th May, 2010

Aged Care In Victoria (2008) Victorian Government Health Information, Available: http:// www.health.vic.gov.au/agedcare/services/assess.htm Last accessed: 20th May, 2010 Agius, J (2010). Co-Owner of two aged care facilities. Interview with Mark Agius. 25 May. Melbourne.

Australian Government: Department of Heath and Ageing (2009). Residential Care Manual.

Csesko, M & Reed, R (2009) Will residential aged care facilities meet long-term demand?. Property Management. 27 (1) 58-74

Extra Service Satus (2010) Department of Heath and Ageing, Available: http://www.health.gov.au/ess Last accessed: 20th May, 2010

Hogan, J (1979) The Valuation of Nursing Homes. Appraisal Journal. np (np) 185-194

Population Clock (2010) Australian Bureau of Statistics, Available: http://www.abs.gov.au/ausstats/abs %40.nsf 9471 3ad445ff1425ca2568 2000192af2/1647509ef7e25faaca2568a900154b63?OpenDocument Last accessed: 27th May, 2010

Patterson, D (1996) What is your facility worth?. Nursing Homes: Long Term Care Management. 45 (6) 15

Planning For An Ageing Community (2005) Australian Local Government Association, Available: http:// www.alga.asn.au/policy/healthAgeing/ageing/plan/discussionPaper/02.demographic.php Last accessed: 27th May, 2010

Sidwell, A (1991) The Valuation of Nursing Homes and Residential Homes. Journal of Property Valuation and Investment. 9 (np) 352-356

Simpson, J (1994) How to review a nursing home appraisal. Appraisal Journal. 62 (4) 542

The Australian Federal Government (1997). Aged Care Act 1997 [online]. [Accessed 12th May 2010].Available from: <http://www.austlii.edu.au/au/legis/cth/consol_act/aca199757/sch1.html>.

Vincent, R (2010). Director of Nursing of an aged care facility. Interview with Mark Agius. 25 May. Melbourne.

*Sample Valuation Document - Available on request.

Applying Duration To Commercial Property. What does it mean for the all risk yield?

Mark McNamara

The aim of this paper is to further examine duration in the context of property to test if it can be used as a measure of a property's value sensitivity to changes in the all risks yield. If it can be shown duration accurately describes the change in property value for an incremental change in the all risks yield, a rigorous and accurate basis for hedging property in the capital markets can be applied.

In the article "Reassessing WALT" which was published in the June 2010 issue of ANZPJ it was shown how duration can be calculated for commercial property. This paper focused on vacancy risk and it was proposed the use of weighted average lease term (WALT) and duration statistics together improved the rigour and insight into a commercial property's expiry profile.

While this interpretation of duration is of interest in the property market, it is not the principal reason for its use in finance. Duration is most commonly used as a measure of a security's price sensitivity to changes in interest rates.

Photo J.Leslie

ALL RISKS YIELD RISK

The basis of price risk is unexpected increases in the all risks yield. The relevance of this risk to market players depends on the volatility of yields and on the ability of a property investor to anticipate yield changes. The current environment suggests that volatility has increased during the recession with a general softening of yields.

Yield risk would not pose a risk to property investors and fund managers if they could accurately forecast these movements. If yields could be forecast accurately, investors could assume speculative positions that would benefit from yield rate movements and fund managers could take action to protect their positions from untoward movements in yields. Despite monitoring indices across property market sectors and the body of growing property research, property investors are unable to forecast yield movements consistently. In this regard, it is noted that the major property investors, LPT's and fund managers are not speculators.

Yield risk has two aspects, price risk and reinvestment risk. While these elements are not independent of each other they can be distinguished. The former is associated with the fall in a property's market value when yields increase, whereas the latter is associated with changes in the future value of property due to a change in the rate of return on the reinvestment of funds. For example, while a reduction in yields will always raise the value of an investment property, a lower IRR would also be expected reducing the accumulated value of the rent payments. The focus on this reinvestment problem is considered later in this paper. The immediate focus associated with fluctuating yields is price risk.

The aim of this paper is to further examine duration in the context of property to test if it can be used as a measure of a property's value sensitivity to changes in the all risks yield. If it can be shown duration accurately describes the change in property value for an incremental change in the all risks yield, a rigorous and accurate basis for hedging property in the capital markets can be applied.

In the article "Reassessing WALT" which was published in the June 2010 issue of ANZPJ it was shown how duration can be calculated for commercial property. This paper focused on vacancy risk and it was proposed the use of weighted average lease term (WALT) and duration statistics together improved the rigour and insight into a commercial property's expiry profile.

While this interpretation of duration is of interest in the property market, it is not the principal reason for its use in finance. Duration is most commonly used as a measure of a security's price sensitivity to changes in interest rates.

PRICE RISK

Investors in property are naturally concerned about their exposure to risk that comes from changing market yields. We know property prices move inversely with yields, but the degree of change is not linear, and the price of all property does not vary to the same extent in response to a given yield movement.

A property's price is the discounted value of its outstanding rent and reversion. The market-determined yield is used to value the reversion capitalising at the all risks yield and then deferred for the period of the term at the discount rate adopted. It follows that, the greater the amount of discounting (defined as the difference between the nominal undiscounted value and the present value of the cash flows) the greater is the property's price sensitivity to changes in the yield.

A study by Baum and Crosby (1988) simulated a large number of combinations of capitalisation rates, term: reversion ratios, unexpired terms and equated yields all at a fixed five-year rent review period. The main points to emerge were:

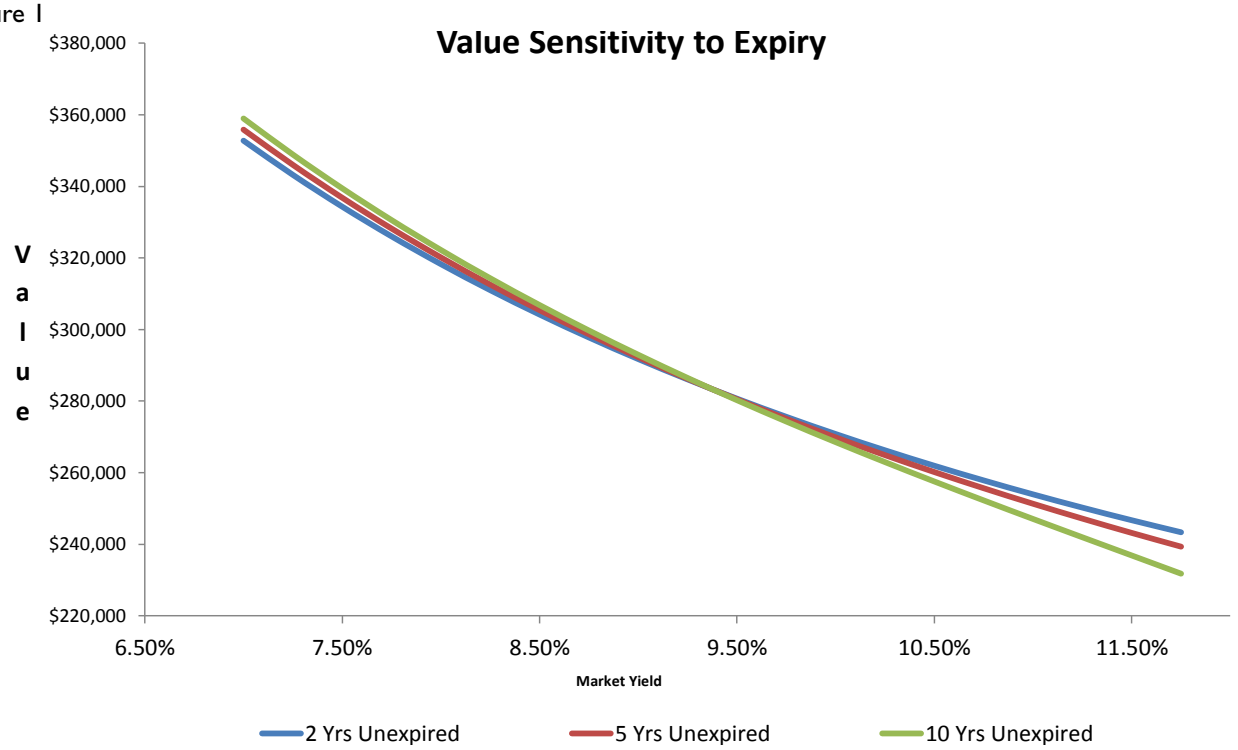
- There is a cut-off where the increase in value of the reversion resulting from higher equated yields is offset by the reduction in the term value. At the point the range in values is at a minimum.
- The unexpired terms of up to ten years, the range in values is only 2.2%.
- The range in values is low with high term: reversion ratios.
- As the unexpired terms increases, so does the range.
- As the capitalisation rate increases, so does the range in values.

The further out a property's reversion, the more the cash flows are weighted toward the far end of a property's cash flow horizon, the more sensitive the property's price will be to changes in yields.

An analysis in more detail of the fall in a property's market value in response to an increase in market yield follows. Consider a suburban shop investment leased in 2008 on a 12 year lease with 3 year ratcheted (upward only) reviews at $50,000. The property is to be valued in 2009. The market rent has risen to $60,000 pa and the all risks yield of a similar shop leased at its current rent is estimated to be 8.5% from comparables. Discount rates for properties of this risk profile are estimated at 10.5%.

Net Contract Income	$50,000	
PV $50,000, 2 years @ 10.5%		$86,198
Reversion income	$60,000	
FV of $60,000, 2 years @ 2.17%	$62,632	
Capitalised in perpetuity @ 8.5%	$736,849	
deferred 2 years @ 10.5%		$603,468
Capitalised Value (before costs)		$689,666

Figure 1



Should the all risks yield increase to 9.0% and IRR's to 11% p.a., the property's value will fall to:

Net Contract Income	$50,000	
PV $50,000, 2 years @ 11%		$85,626
Reversion income	$60,000	
FV of $60,000, 2 years @ 2.18%	$62,645	
Capitalised in perpetuity @ 9%	$696,053	
deferred 2 years @ 11%		$564,932
Capitalised Value (before costs)		$650,558

Observe that the percentage reduction in the present value of the property's term value is 0.67% ($86,198 to $85,626), whereas the percentage reduction in the present value of the reversion is 6.8% (from $603,468 to $564,932). This analysis shows that the sensitivity of the value of the two elements of a property's cash flow differs for a given change in yield, with the value of the reversion value being more sensitive.

PRICE SENSITIVITY AND TERM REVERSION RATIO

Why is the present value of a property's reversion value more sensitive to a change in yield than the present value of the term? Observe that the reversion is the largest and the last of a property's cash flow. Consequently the discount factor will have a greater effect on it than on the term value. It might be expected, therefore, that the present value of property with a longer expiry (but equivalent in other respects) will be more sensitive to yield changes than properties with shorter expiries. This expectation can be examined where three physically similar over rented properties with the same net operating income of $60,000 are considered. Property A has two years unexpired; property B, 5 years unexpired and property C, 10 years unexpired. Each has the same estimated market net income, $20,000. At combinations of all risks yields and equated yields between 7.00% - 11.75%. (See Figure 1)

The curves show the value sensitivity of these properties over a wide yield spread and illustrates that the value sensitivity of property increases with term to expiry. In this example, all properties are over rented. Because the present value of the term value is less sensitive than the reversion value, it follows that properties that are over rented would be less value sensitive in the term (because the term rental stream is a larger component of the property's present value). However, because the reversion value haemorrhages at expiry due the market rent being less than contract rent when capitalised, long term unexpired over rented property is more sensitive to value volatility.

DURATION

It's been shown that investors of property are subject to value risk, which, given the uncertainty of yield changes, suggests a hedging strategy would be useful. One method of hedging is to finance the purchase of property by the issue of fixed interest liabilities in such a way that the yield movements do not disturb the investor's net worth. Two strategies for hedging value risk are:

- To offset the value risk on assets by holding an appropriate portfolio of liabilities, and
- To immunise the future value of a portfolio against all risks yield risk.

In both cases we will use the concept of duration to determine how to adjust asset portfolios to hedge their value against all risks yield risk. Before demonstrating these strategies, further examination of the characteristics of duration as it applies to property is required.

MEASUREMENT OF VALUE SENSITIVITY

Duration is mostly used as a measure of a securities price to sensitivity to changes in interest rates. Whilst bonds and property are distinctly different investment media, the common element they share is cash flow. In fact their respective cash flow profiles are not that dissimilar. Pairing these characteristics, a bonds coupon resembles property rent; property's reversion compares to a bond's redemption. The bond market benefits from its use where there is a direct result of there being, for a coupon-paying bond, a relationship between (1) duration; and (2) the percentage change in the bond's value caused by a change in the interest rates (Macaulay 1938).

The crux of this paper is to test if a similar relationship exists for property between (1) duration; and (2) the percentage change in the property's value caused by a change in the all risks yield. To be more explicit:

$$(\Delta V/V=)-D*\Delta k$$

Where:
Δ indicates a small change
v is the value of a property
D is duration
k is the all risks yield

Photo J.Leslie

Consider an office building on September 2010. Rent reviews are 3 year ratcheted (upward only) reviews and the net operating income is $50,000. The market rent has risen to $60,000 pa and the all risks yield of similar office premises is 8% from comparables. Discount rates for properties of this risk profile are estimated at 10.0%. The value is calculated as:

Net Contract Income	$50,000	
PV $4,167, 24 months @ 0.83% /mth in-adv		$91,048
Reversion income	$60,000	
FV of $60,000, 2 years @ 2.16%	$62,620	
Capitalised in perpetuity @ 8%	$782,745	
deferred 23 months @ 0.83% /mth in-adv		$646,734
Capitalised Value (before costs)		$737,781

The duration is calculated as follows:

$$\text{Duration} = \frac{\$16,623,525}{\$737,781} = 22.53 \text{ months} = 1.88 \text{ years}$$

No. of periods to payment	Cash flow	Discount factor D = (1.1)-t in -adv	Present value PV = D X C	Years X PV t X PV
1	$4,167	1	$4,167	$4,167
2	$4,167	0.991735537	$4,132	$8,264
3	$4,167	0.983539376	$4,098	$12,294
4	$4,167	0.975410951	$4,064	$16,257
5	$4,167	0.967349704	$4,031	$20,153
6	$4,167	0.959355078	$3,997	$23,984
7	$4,167	0.951426524	$3,964	$27,750
8	$4,167	0.943563494	$3,932	$31,452
9	$4,167	0.935765449	$3,899	$35,091
10	$4,167	0.92803185	$3,867	$38,668
11	$4,167	0.920362166	$3,835	$42,183
12	$4,167	0.912755867	$3,803	$45,638
13	$4,167	0.90521243	$3,772	$49,032
14	$4,167	0.897731335	$3,741	$52,368
15	$4,167	0.890312068	$3,710	$55,645
16	$4,167	0.882954117	$3,679	$58,864
17	$4,167	0.875656976	$3,649	$62,026
18	$4,167	0.868420141	$3,618	$65,132
19	$4,167	0.861243115	$3,589	$68,182
20	$4,167	0.854125403	$3,559	$71,177
21	$4,167	0.847066516	$3,529	$74,118
22	$4,167	0.840065966	$3,500	$77,006
23	$4,167	0.833123272	$3,471	$79,841
24	$786,912	0.826237956	$650,176	$15,604,234
		Value =	$737,781	$16,623,525

MODIFIED DURATION

Modified duration is an extremely useful measure of an individual property's sensitivity to all risks yield movement. Modified duration can also be applied to measuring yield risk to a whole portfolio of properties. Additionally, it provides a means of assessing the degree of mismatch that exists between a portfolio of properties and a benchmark or series of underlying liabilities.

Where D' = (D/1 + e) is called the **modified duration** (e = equated yield or discount rate).
The modified duration is therefore:

$$D' = \frac{22.53}{(1+\frac{0.1}{12})} = 22.34 \text{ months or } 1.86 \text{ years}$$

The equation above shows that the sensitivity of a property's value, as indicated by the percentage change in its price, to a small change in the all risks yield is inversely proportional to the property's duration. This measure indicates that an increase (or decrease) in the yield of 1 percentage point p.a. will result in a decrease (increase) in the value of the property of approximately 1.86%. That is:

$$\Delta V/V = -1.86 \times 1$$
$$= -1.86\%$$

The accuracy of the duration-based prediction of property value change can be tested by computing the value of the property given an all risks yield of 8.01%.

Net Contract Income	$50,000	
PV $4,167, 24 months @ 0.83% /mth in-adv		$91,048
Reversion income	$62,607	
FV of $60,000, 2 years @ 2.15%	$62,632	
Capitalised in perpetuity @ 8.01%	$781,606	
deferred 23 months @ 0.83% /mth in-adv		$645,793
Capitalised Value (before costs)		$736,840

The value of the property when the all risks yield was 8.0% was $737,781. The actual percentage change in the value of the property is:

$$\frac{\Delta V}{V} = \frac{(737781 - 736840)}{736840} = 0.1277\%$$

The figure differs from the predicted value of 1.86% because of the curvilinear nature of the relationship between value and all risks yield (see Graph 1) means that the duration measure needs modification to take cognisance of this aspect.

CONVEXITY

Using duration alone for risk management assumes a straight-line relationship between changes in value and changes in yield. However, as demonstrated in Graph 1, when a property's value change is plotted against large changes in all risks yield, the resultant plot line is curved. That is, the plot line has a convex shape. Therefore, the use of duration and modified duration are only approximations for small changes in yield which are accurate enough for bonds. For property, the curve is pronounced to the degree small changes in yield require a technique that takes account of the curvature.

Supplementing modified duration as a risk measure is convexity. Convexity captures the curvature (or convexity) of the change in property value to a change in yield.

More specifically:

Expected change in property value =

$$\Delta k \times MD + \frac{1}{12} X (\Delta k) 12$$

Where:

Δk = change in all risks yield
MD = modified duration

Duration measures the 'slope' of present value profile, whereas convexity measures the curvature of the present value profile. The convexity measure is the sensitivity of a property's duration to changes in all risks yield. The formula for convexity is:

Convexity (in years) =

$$\frac{1}{\left[1+\left(\frac{e}{p}\right)\right]^2} \sum_{t=1}^{n} \frac{t \times (t+1) PVCF_t}{p^2 \times PVTCF}$$

Where:

n = number of periods until expiry
t = the time period or fraction of a time period
PCVFt = the present value of cash flow in period t discounted at the equated yield
PVTCF = the value of the property
p = number of periods per year
e = equated yield

This is a rather daunting formula at first glance, however a simple table approach to calculating the convexity of a property takes away the mystique.

Continuing with the example where the modified duration was calculated, the convexity is:

Time (1)	Cash flow (2)	Discount (3)	PV (4) PV = D X C (2 X 3)	Weighting (5) (1 X 2 X 3)	t X (t + 1) X PV ((t + 1 X 5)
1	$4,167	1	$4,167	$4,167	$8,333
2	$4,167	0.991735537	$4,132	$8,264	$24,793
3	$4,167	0.983539376	$4,098	$12,294	$49,177
4	$4,167	0.975410951	$4,064	$16,257	$81,284
5	$4,167	0.967349704	$4,031	$20,153	$120,919
6	$4,167	0.959355078	$3,997	$23,984	$167,887
7	$4,167	0.951426524	$3,964	$27,750	$222,000
8	$4,167	0.943563494	$3,932	$31,452	$283,069
9	$4,167	0.935765449	$3,899	$35,091	$350,912
10	$4,167	0.92803185	$3,867	$38,668	$425,348
11	$4,167	0.920362166	$3,835	$42,183	$506,199
12	$4,167	0.912755867	$3,803	$45,638	$593,291
13	$4,167	0.90521243	$3,772	$49,032	$686,453
14	$4,167	0.897731335	$3,741	$52,368	$785,515
15	$4,167	0.890312068	$3,710	$55,645	$890,312
16	$4,167	0.882954117	$3,679	$58,864	$1,000,681
17	$4,167	0.875656976	$3,649	$62,026	$1,116,463
18	$4,167	0.868420141	$3,618	$65,132	$1,237,499
19	$4,167	0.861243115	$3,589	$68,182	$1,363,635
20	$4,167	0.854125403	$3,559	$71,177	$1,494,719
21	$4,167	0.847066516	$3,529	$74,118	$1,630,603
22	$4,167	0.840065966	$3,500	$77,006	$1,771,139
23	$4,167	0.833123272	$3,471	$79,841	$1,916,184
24	$786,912	0.826237956	$650,176	$15,604,234	$390,105,844
			$737,781	$16,623,525	$406,832,259

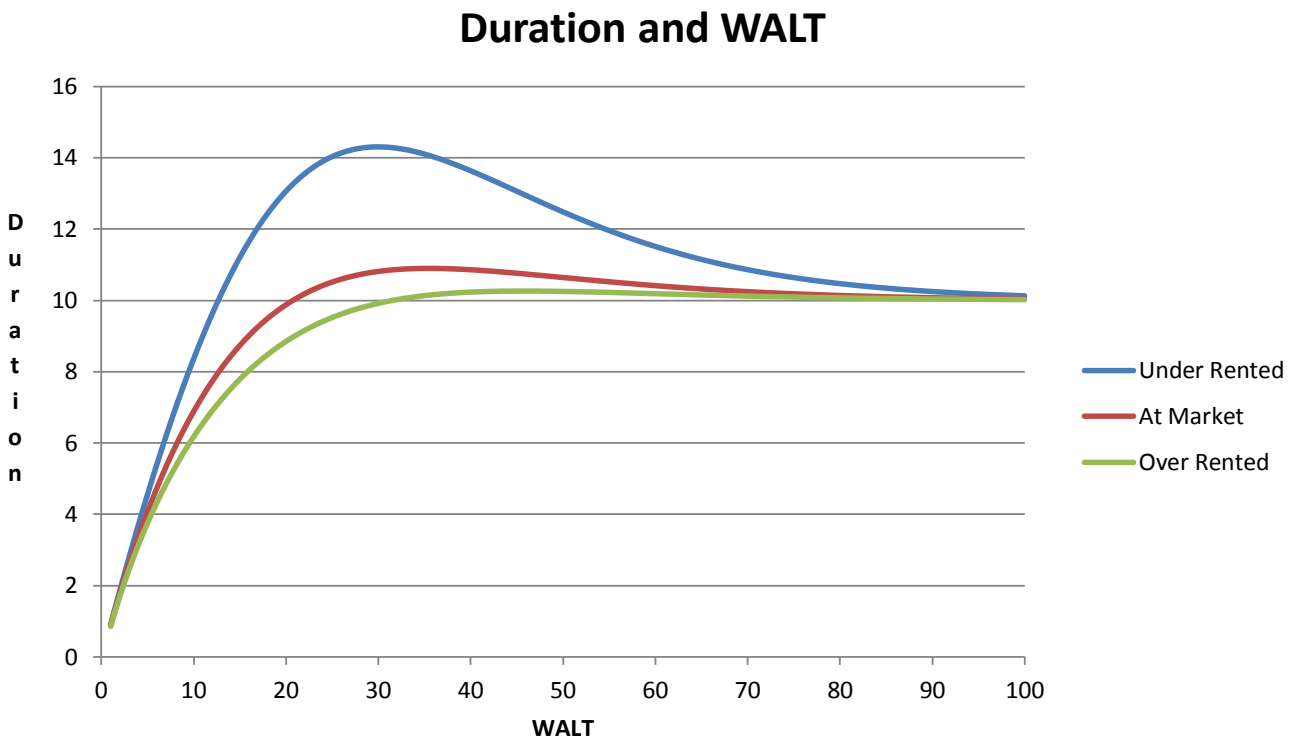
$$\text{Convexity} = \frac{\sum PV \times t \times (t+1)}{(1.00833)^2 \times 2^{12} \times 737781}$$

$$= \frac{\$406,832,259}{\$3,072,528,502}$$

$$= 0.13 \text{ years}$$

Photo J.Leslie

Figure 2



The resultant convexity is very close to the actual change in value where the all risks yield was increased to 8.01% (percentage change 0.1277%). This now is where convexity duration becomes useful as the variable affecting property valuations is the all risks yield (as applied in the Modified DCF Approach) – see paper by MacNamara in June 2009 issue of ANZPJ. Therefore convexity accurately describes the change in property value for an incremental change in the all risks yield. Thus convexity is relevant in regards treasury policies. The writer believes most property treasury policies use WALT as forming the basis of the term for any interest rate swaps that they introduce to hedge funding costs; this due to the absence of a rationale statistic on which to base these decisions.

The challenge in applying the principals of finance with property centres on the interplay between duration of borrowing, versus duration of leases and the duration of all future cash flows.

The characteristics of convexity are:

- It increases with longer expiry
- It decreases with rising rental streams
- It decreases with increasing all risks yields
- Property is more convex than financial instruments such as bonds. Hence, it is more appropriate to use convexity with property.

DURATION CHARACTERISTICS

There are four behavioural characteristics of duration. Firstly, there is an inverse relationship between duration and the rental paid; properties which are over rented will have shorter duration than properties set at market rent or under rented, all other things being equal. Over rented properties cause a larger proportion of the income stream to be made prior expiry rather than at expiry. Hence over rented properties result in shorter durations.

Second, duration varies inversely with the all risks yield. At a higher all risks yield, the relative importance of the reversion at expiry diminishes and this shortens the property's duration. This has an important implication as it shows that, each time the all risks yield changes, the duration of property varies in the reverse direction.

Third, properties that have a long WALT will tend to have a lower duration relative to their WALT than short-term unexpired properties. This relationship arises because the discount factor reduces the present value of the reversion as the proportion of a property's present value, the longer the WALT. (See Figure 2)

This relationship has an important implication for the management of property portfolios. WALT matching becomes increasingly inaccurate as a means of hedging against price risk when long-term expiry properties are involved.

Figure 2 also shows that as a property's WALT becomes very long, the duration approaches a limit.

Fourth, duration diminishes over time; i.e. a property with a WALT of 5 years will have a shorter duration after one year has elapsed. However, the relationship between duration and time changes direction at the moment each rental payment is made. In the case of multi-tenanted properties with vacancies, where new leases are secured, the duration will then increase. If a there is a demolition clause in the lease, and this option is exercised, the duration will reduce.

APPLICATION OF DURATION

Consider a portfolio manager has invested in the Listed Property Trust's (LPT) sector and constructed the portfolio set out in Table 3

Table 3

LPT	Market Weight %	Modified Duration of LPT	Weighted
Affiliated Office Trust	20%	4.5	0.9
Diversified Commercial Trust	40%	4	1.6
Pure Industrial Trust	40%	3	1.2
Total	100%		3.7

Property Research Houses indicate market benchmarks are:

LPT	Market Weight %	Modified Duration of LPT	Weighted
Premium Office	35%	5	1.75
Diversified	35%	4	1.4
Industrial	30%	3	0.9
Total	100%		4.05

It could be said the portfolio manager's overall modified duration relative to the benchmark is -0.35 years (i.e. 3.7 – 4.05). Moreover, the portfolio manager is expecting all risks yields to increase because the relative modified duration is negative or the modified duration of the portfolio is less than the benchmark. This would mean the value of the portfolio is expected to drop. For diversified listed commercial property, the portfolio manager is expecting the spread in all risks yields to contract (i.e. 1.6 - 1.4 = 0.2 years).

Furthermore, if the average all risks yield spread on industrial widens by 10 basis points, the portfolio would under-perform by 3bp compared to the benchmark, all other things being equal, i.e.:

1.2 – 0.9 = 0.3 years long duration in industrial sector.

Relative benchmark = $\mathbf{-D \times \Delta k}$

-0.3 x 10 = -3bp.

FINANCE RISK

Thus far duration has been considered in property assuming 100% equity. In reality, property is generally financed through both equity and debt. This introduces financial risk where rising interest rates increase debt servicing and reduces the return on equity. Hedging provides a strategy to structure the balance sheet against untoward movements in interest rates which otherwise can severely affect the return on equity. Several examples are now investigated to demonstrate the application of hedging to protect the return on equity.

HEDGING USING DURATION

To illustrate the use of duration to hedge the balance sheet of a property company's exposure to interest rate movements the following example is considered. A commercial property owned by a property trust with a current valuation of $3,688,900 has just been refinanced with a table mortgage of $1,900,000, monthly repayments over 25 years at a fixed interest rate of 9.00% p.a. The mortgage is further subject to a balloon repayment at the end of five years. Current all risks yields for similar investment properties are estimated at 9.5%. The property has a duration of 2.0557 years, however has liabilities of future non coupon, non convertible notes and assets of cash as shown in balance sheet 1.

Balance Sheet 1

Assets		Duration
Property	3,688,900	2.0557
Cash	658,005	0.0000
Liabilities		
Mortgage	1,900,000	3.9309
Non Convertible Notes	658,005	3.6026
Equity	1,788,900	0.0000

The property's equity is $1,788,900. The average weighted duration of the liabilities is 2.26 years and the assets average weighted duration is 1.74 years; hence the property displays a duration gap. Calculations of the durations for the non convertible notes and mortgage and are set in Tables 4 and 5 overleaf:

Table 4: Non Convertible, zero coupon notes

Year periods to payment t	Cash flow C	Discount factor $D = (1+\%)^{-t}$	Present value PV = D X C	Years X PV t X PV
-	$0	-	$0	$0
1	$0	-	$0	$0
2	$0	-	$0	$0
3	$500,000	0.772183	$386,092	$1,158,275
4	$250,000	0.708425	$177,106	$708,425
5	$100,000	0.649931	$64,993	$324,966
6	$50,000	0.596267	$29,813	$178,880
			$658,005	**$2,370,546**

Duration = $\frac{\$2,370,546}{\$658,005}$ 3.60 years

Table 5: Mortgage Shedule

Number of periods to payment t	Cash flow C	Discount factor $D = (1+\%/12)^{-t}$	Present value PV = D X C	Years X PV t X PV
1	$15,945	0.992556	$15,826	$15,826
2	$15,945	0.985167	$15,708	$31,416
3	$15,945	0.977833	$15,591	$46,774
4	$15,945	0.970554	$15,475	$61,901
.	.	.	.	.
58	$15,945	0.648316	$10,337	$599,559
59	$15,945	0.643490	$10,260	$605,356
60	$1,788,121	0.638700	$1,142,072	$68,524,345
			$1,900,000	**$89,625,128**

Duration = $\frac{\$89,625,128}{\$1,900,000}$ = 47.17 months = 3.93 years

The return on equity is calculated as:

Return on Equity =

$$\frac{\text{Net operating Income - debt service}}{\text{Equity}}$$

$$\frac{\$350,446 - \$191,337}{\$1,788,900}$$

= 8.89%

The return on equity can also be approached using the band of investment. This is a weighted average of the rates earned by the various components of the investment. In this case the structure is set out in Table 6:

Table 6: Working proportions

Assets				
Property	0.8486	x all risks yield of	9.50%	= 0.080620
Cash	0.1514			
Liabilities	less:			
Non Convertible Notes	0.1513			
Mortgage	0.4371	x mortgage constant	0.100704	= 0.044017
Equity	**0.41153**	**x return on equity**		**= 0.036603**

from which the return on equity is 8.89% (0.036603 ÷ 0.41153).

When interest rates fall by one percentage point, the property's equity falls because the present value of the non convertible notes increases to $680,240 and the present value of the assets remain at $4,346,905. The reduction in equity is $22,236 ($1,788,900 - $1,766,664). Balance sheet 2 illustrates this scenario:

Balance sheet 2: Interest rates decrease 1%

Assets		Duration
Property	3,688,900	2.0557
Cash	658,005	0.0000
Liabilities		
Mortgage	1,900,000	4.0012
Non Convertible Notes	680,240	3.6092
Equity	1,766,664	0.0000

This reduction in equity can be avoided if the assets are restructured so as to close the duration gap. The duration of the assets can be increased by using cash to purchase medium-term bonds, such as 5-year 8.00% NZ Bonds. When the 5-year bond rate is 8.00% assuming an 11.0% coupon, the duration is 3.9952 years. To achieve a duration of 2.26 years, $560,832 of the balance sheets cash assets should be exchanged for 5-year NZ bonds (5,000 8% yield, 12% coupon priced at $112.17 per $100 face value) as the duration of several assets is the weighted average of the duration of the individual assets. This change is shown in balance sheet 3:

Balance sheet 3: Bonds & cash

Assets		Duration
Property	3,688,900	2.0557
Bonds	560,832	3.9952
Cash	97,173	0.0000
Liabilities		
Mortgage	1,900,000	3.9309
Non Convertible Notes	658,005	3.6026
Equity	1,788,900	0.0000

Given the revised asset structure, the balance sheet's equity is approximately protected against interest rate risk. For example, a one percentage point reduction in rates will increase the bond's present value by $22,334 (from $560,832 to $583,166) which almost counterbalances the $22,236 increase in the present value of the non-convertible notes. This is illustrated in balance sheet 4:

Balance sheet 4: Bonds & cash decrease 1%

Assets		Duration
Property	3,688,900	2.0557
Bonds	583,166	4.0168
Cash	97,173	0.0000
Liabilities		
Mortgage	1,900,000	3.9309
Non Convertible Notes	680,240	3.6092
Equity	1,788,999	0.0000

The change in asset structure also beneficially changes the weighted average of the rates earned by the various components of the investment where the bonds coupon further increases the equity cash flow. The revised structure is set out in Table 7 from which return on equity is 12.48%.

Table 7: Working proportions

Assets				
Property	0.8443	x all risks yield of	9.50%	= 0.080207
Bonds purchased	0.1335	bond x coupon	11.00%	= 0.014682
Cash	0.0222			
Liabilities	less:			
Non Convertible Notes	0.0222			
Mortgage	0.43486	x mortgage constant	0.100704	= 0.044017
Equity	**0.40945**	**x return on equity**		**= 0.051097**

While this example demonstrates adjusting the asset structure to achieve a hedge to movements in interest rates, a more realistic approach would be to adjust the liability profile. One way would be to restructure the mortgage term, even more practically would be to introduce a common interest rate derivative called an interest rate swap. In simple terms, an interest rate swap is an exchange of coupon streams on a notional (no principal amounts change hands) face value amount, normally with a Bank. For a defined term (let's say 5 years) one party receives an agreed fixed rate coupon typically every six months and the other party receives a floating rate every 3 months. When the swap is established it has no market value (as the fixed rate is the determined by solving for this outcome). A property treasurer or CFO, will be able to take the previous balance sheet example and enter into a 'pay' interest rate swap. This means the Treasurer will agree to pay a fixed rate in order to reduce the duration of the physical loans in place. In this example the assets have a weighted duration of 1.745 years, while the liabilities have a duration of 2.314 years. By taking the physical amount borrowed of $2,58,240 ($1,900,000 + $680,240) as the notional face value, the Treasurer could enter into a pay swap with a duration of 0.96 years which will reduce the duration of the liabilities to 1.745 years and hedging is achieved as set out in Balance Sheet 5 below (note I would like to acknowledge Grant Hassell, Head of New Zealand Fixed Income, AMP Capital Investors, for his insight into SWAP strategy):

Balance sheet 5

Assets	Swap 2,580,240 notional face value	Duration	Weighted Duration
Property	3,688,900	2.0557	1.744522
Cash	658,005	0.0000	1.744522
	4,346,905		**1.744522**
Liabilities			
Mortgage	1,900,000	4.0012	1.748895
Non Convertible Notes	680,240	3.6092	0.564798
Equity	1,766,665	0.0000	0
Swap	- 2,580,240 (market value zero)	0.0959	-0.569171
	4,346,905		**1.744522**

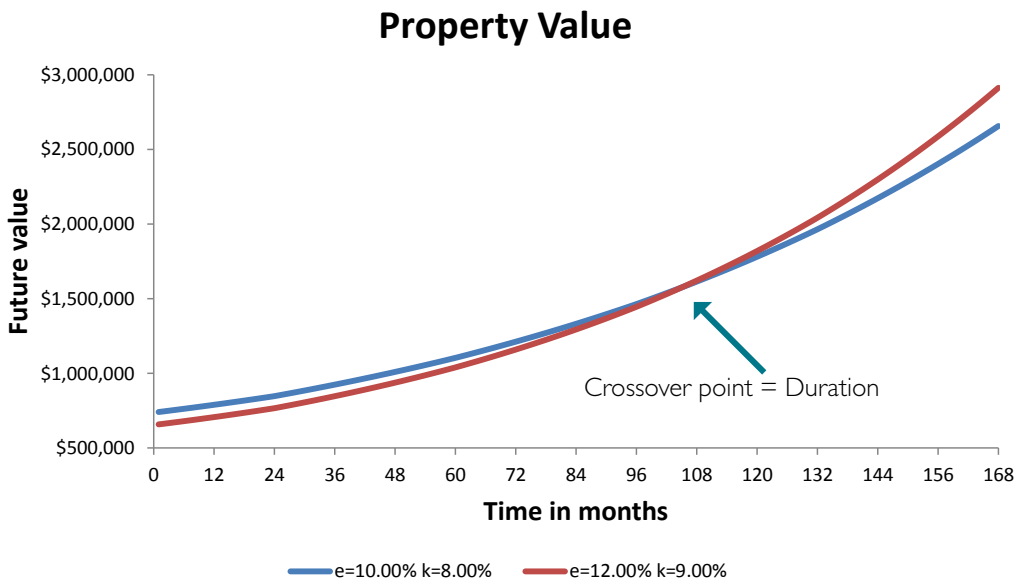
IMMUNISING THE REVERSION

Focus has been on the fact that duration is a measure of the sensitivity of the present value of a property's cash flows. As such it allows for the effects of a change in all risks yield on the value, whereas a change in the equated yield changes the reinvestment of the rental payments. These effects are illustrated by the curves in Figure 3 which show the future (i.e. Accumulated) value of a CBD office building leased with 14 years unexpired. The reviews are ratcheted (upwards only) every three years and the next one is in 2 year's time. The current contract rent is $50,000 pa and estimated market rent is $60,000 pa. All risks yields from comparables are estimated at 8.00%. The flatter blue curve assumes an IRR of 10% whereas the steeper red curve assumes all risks yields have increased to 9%. The increase in the all risks yields causes a substantial fall in the property's value however it assumed the investor's IRR will be higher at 12% as the purchase price is less. This means the rate of interest accumulation associated with the reinvestment of the rental payments is higher, which is shown by the steeper red curve.

The duration of the property when the all risks yield is 8% is approximately 8.7 years which implies that the future value of the property 8.7 years from now is immune from the immediate change in all risks yields, even a 100 basis points shift to 9.0%. The steeper red curve in Graph 3 shows that the property's future value recovers sufficiently from the initial effect of the jump in the all risks yield to 9% to intersect the flatter blue curve in 8.7 years. This property of duration can be used by a property portfolio manager to immunise the property portfolio's future value at a particular date from all risks yield provided the period to this date equals the portfolio's duration by calculating the IRR which equates to the intersection date cross over. This property of duration is germane when the property portfolio manager has a particular investment horizon mandate (e.g. a closed ended fund).

Fund managers can consider duration when hedging a property portfolio. Strategies other than asset/liability management for hedging purposes include financial futures, swaps and forward rate agreements.

Figure 3



CONCLUSION

Duration, modified duration and convexity have the potential to be used in hedging, portfolio immunisation and comparison for properties for switching purposes. All three are important in highlighting the differences between the relative structure of a property portfolio and its liabilities or performance benchmark.

Understanding the concepts of, and being able

to calculate, volatility dollar value per basis point, duration, modified duration and convexity gives you powerful analysis skills when measuring the risks associated with all risks yield exposure.

Dollar value per basis point (DVPBP) is a critical measure as it clearly defines the amount of money that will be made or lost if all risks yields change by 0.01%.

Any portfolio deviation from a property benchmark duration, modified duration and convexity is a useful risk management identifier to the portfolio manager.

All of the risk measures covered can be used equally to define the risk characteristic of a property portfolio as for the risk characteristics of a borrower's portfolio. ■

REFERENCES

Mark McNamara, Reassessing WALT, June 2010 Vol 2/No.3, Australia and New Zealand Property Journal.

Baum, A and Crosby, N (1988): Property Investment Appraisal, Routledge, London.

Macaulay, F. (1938), The Movements of Interest Rates. Bond Yields and Stock Prices in the United States since 1856, New York: National Bureau of Economic Research.

Mark McNamara, Solving k, Sept 2009 Vol 2/No.3, Australia and New Zealand Property Journal.

I would like to acknowledge **Grant Hassell**, Head of New Zealand Fixed Income, AMP Capital Investors, for his insight into SWAP strategy.

Photo J.Leslie

WACC as a Surrogate for a Real Property Market Derived Discount Rate - an Alternative Perspective

Wayne Timson, AAPI

There seems to be increasing advocacy from some in recent years, promoting the use of Weighted Average Cost of Capital (WACC) as a surrogate for a real property market derived discount rate, when using a DCF valuation model. This brief discussion paper offers an alternative perspective.

The debate was most recently stoked by a Real Time article titled "Navigating without signposts: an expanded approach to valuation", published in the A&NZ Property Journal, December 2010, Vol 2 / No. 8, written by Peter Power.

I found the article refreshing as it challenges both my valuation training and observation of real property market mechanisms over the past three decades. I welcome the author's input and obvious high level of subject knowledge.

However I disagree with Mr Power's claims that a formulaic finance theory based approach may be substituted for targeted and specific market analysis, to derive an appropriate discount rate for use in a DCF valuation. A developed WACC is not a proxy for a market transaction derived discount rate, even when there is a lack of comparable evidence.

I found the article to be a paradox at a time when we are trying to understand what went wrong to cause the GFC, and that in the same volume of the Journal, the API National President's Report implores that "members of the Institute need to remind themselves of their professional integrity and of the Institute's Valuation and Property Standards".

I specifically disagree with a number of claims made under the heading 'Constructing the discount rate' in the article.

The author claims the discount rate applied to value real investment property "is a required rate of return representing the margin above a risk-free rate of return". I believe the return referred to is the sum of the risk-free rate and a margin that relates to a specific subject property.

Whilst it is true that an adopted discount rate, reduced by the relevant risk-free rate, will derive a 'margin', there are components of this margin that may not be able to be either explicitly described or quantified arithmetically or by fundamental financial theory and analysis. Factors influencing these un-quantifiable components relate to the psychology of the market herd, and may be counter-intuitive to purely arithmetic valuation fundamentals.

The recent GFC was an explosive and very obvious example of the markets behaving in unexpected ways that were not indicated by contemporaneous fundamental financial analysis.

A scan of valuation inputs utilised in the article indicates to me that both Asset Beta (Ba) and the Equity Market Risk Premium (EMRP) are the main market derived inputs applied to develop a discount rate, in applying the cost of capital approach to developing a discount rate. Of these, the Ba of 0.49 adopted in the article indicates a relatively high level of accuracy of 1% (two decimal places). At "Table 2 – WACC Calculation" its derivation is described as "Asset Beta selected based on analysis of comparable data".

However "Table 1 – Asset Beta Observations" only includes a Ba of 0.49 for the Macquarie Office Trust for the quarter ended 31 December 2007. Given the date of valuation to be 1 July 2009, this single occurrence of the same factor is probably not the reason for its adoption.

> "most real estate valuers practising in investment valuation are not able to construct either a discount rate or an argument for a discount rate from first principles…

A thorough search of the article however, did not enlighten me as to either what objective and or reliable measurement data or analysis processes were employed, to derive the Asset Beta.

Data shown at the same Table 1 for the quarter ending 30 June 2009, similarly left me perplexed, with Asset Betas of 0.37, 0.82 and 1.11 for the three portfolios described in the article.

Given the apparent accuracy of the adopted Ba but without any information given by the author about the process(es) applied in determining it from market data, I decided to carry out an analysis (post tax) of the sensitivity of value to various Ba factors.

The analysis utilised a near (some minor differences due to rounding within the article) replication of the author's DCF model, with only the Ba variable changed. It is noted that a change to the Ba input results in changes to each of the following amounts:-

Equity Beta (Be);

Cost of Equity (Ke);

WACC;

Terminal Yield;

Terminal Value;

Value

The outcomes of the analysis are summarised in the following Table A.

I note the following key revelations from the analysis;

An increase in Ba by 0.1 (from the adopted 0.49 to 0.59) results in a change in value of 3.53% or $16.184 million.

Input of the Low and High Asset Betas shown in the article's Table 1, for the quarter ending 30 June 2009 (nearest the date of valuation), shows a variation from the author's derived value of between minus 15.63% (-$64.394M) and plus 40.68% (+$172.449M).

So what is my point? The author states at the ninth paragraph on page 526, that "most real estate valuers practising in investment valuation are not able to construct either a discount rate or an argument for a discount rate from first principles"

The remainder of the article sets out to counter this perceived failing of valuers, by describing an alternative approach for establishing a discount rate. Unfortunately there is no explanation for the development of the adopted Ba of 0.49, despite this factor accounting for a potential value range (error) up to 56.31% (15.63% + 40.68%), from the presented Ba data for one quarter, for only three real property portfolios.

I wonder whether the relatively small difference (4.09%) between valuations of the valuer, and that derived using the cost of capital approach, is an indication of the accuracy of Mr Power's approach, or of the accuracy of a traditional approach by a valuer relying "to a large degree on sentiment without objective and reliable measurement proxies"^?

CONCLUSION:

Although the derivation of a WACC is attractive in its mathematical elegance, I do not believe that it is a surrogate for a market derived discount rate, when determining the market value of real property. I also believe that the use of a calculated WACC does not satisfy relevant provisions of the International Valuation Standards adopted by the API.

The use of a WACC in a DCF model is more akin to an investment analysis tool (buy; sell; hold) than a market valuation methodology.

I consider that any acceptance by the valuation profession of the use of WACC as a surrogate for a market derived discount rate is dangerous and could blemish our profession globally.

It should be noted that the opinions expressed in this paper are the authors and are not necessarily those of the AVO. ■

Table A: Asset beta sensitivity analysis

Asset Beta (Ba)	Description	Equity Beta (Be)	Post Tax WACC	Terminal Yield	Terminal Value ($'000's) ex disposal costs	Valuation ($'000's)	Difference to Base Case $'000's	Difference to Base Case %
0.49	Adopted in Mr Power's Article -('Base Case')	0.70	8.21%	5.21%	589,575	421,993	-	-
0.59	Base Case Ba + 0.1	0.84	8.81%	5.81%	528,438	405,809	16,184	3.53%
0.37	From author's Table 1 - "Low" @ 30/6/09	0.53	7.49%	4.49%	683,757	486,387	-64,394	-15.63%
0.82	From author's Table 1 - "Median" @ 30/6/09	1.17	10.19%	7.19%	427,028	307,385	114,608	26.93%
1.11	From author's Table 1 - "High" @ 30/6/09	0.15	11.93%	8.93%	343,831	249,544	172,449	40.68%

Note: All input variables are post-tax

AUTHOR'S DETAILS:

Full name:	Wayne George Timson
Position:	Senior Valuer
Employer:	Australian Valuation Office
Address:	31 Ashford Street, Shorncliffe, QLD 4017
Telephone:	0418 780 520
Fax:	(07) 3149 5567
Email:	timsonw@tpg.com.au

AUTHOR'S BIOGRAPHY (BRIEF):

Wayne Timson, AAPI

Wayne Timson is a Senior Valuer with the Australian Valuation Office (AVO) in Brisbane and has a post graduate qualification in Applied Finance & Investment Analysis. With more than 30 years of valuation experience throughout Queensland, NSW, NT and the ACT, Wayne has been involved in many facets of the valuation and analysis of both real and corporate assets. He has also critiqued many private sector DCF valuations for the purposes of the GST Margin Scheme on behalf of the ATO.

^*2nd para pg 526 Real Time article, A&NZ Property Journal, December 2010, Vol 2 / No. 8*

Market Value of Property, Plant and Equipment as part of a Going Concern Business

1. INTRODUCTION

1.1 Purpose

The purpose of this Guidance Note is to provide information, commentary, opinion, advice and recommendations to Members determining market values of property, plant and equipment where those assets are integral to a going concern business. These guidance notes cover various situations to assist Members in undertaking such valuations.

It is also intended this Guidance Note will assist users of valuation reports to understand the basis upon which valuations of property, plant and equipment are undertaken in these circumstances.

This Guidance Note is not intended to repeat information already covered in Practice Standards and other Guidance Notes. Practice Standards and other Guidance Notes which should be read in conjunction with this Guidance Note include:

- IVS 1 Market Value Basis of Valuation
- IVS 2 Valuation Bases Other Than Market Value
- IVA 1 Valuation for Financial Reporting
- AVGN 1 Valuations for use in Australian Financial Reports
- NZVGN 1 Valuations for use in New Zealand Financial Reports
- IVA 2 Valuation for Lending Purposes
- IVGN 1 Real Property Valuation
- IVGN 3 Valuation of Plant and Equipment
- IVGN 4 Valuation of Intangible Assets
- IVGN 8 Depreciated Replacement Cost
- IVGN 9 Discounted Cash Flow Analysis for Market and Non-Market Based Valuations

1.2 Status of guidance notes

Guidance notes are intended to embody recognised 'good practice' and therefore may (although this should not be assumed) provide some professional support if properly applied. While they are not mandatory, it is likely that they will serve as a comparative measure of the level of performance of a Member. They are an integral part of the Valuation and Property Standards Manual.

1.3 Scope of this guidance note

The scope of this guidance note is to provide guidance in any situation where a market valuation of property, plant and equipment forming part of a going concern business is required. This assumes that the assets would be sold as part of a going concern or continuing business. The market value determined for the property plant and equipment must be supported by the cash flows of the going concern business in which they operate.

Often these assets are specialised operational assets, the value of which cannot be readily assessed by reference to market prices.

Non-operational, surplus assets that will not continue to be used as part of the going concern business (e.g. Assets which are approaching or at the end of their economic life) should be valued based on their market value assuming they will be sold separate from the going concern business. Such a value may be higher or lower than the value as part of the going concern business depending upon the specific circumstances, but should reflect the highest and best use of the assets assuming they will no longer be used as part of the going concern business.

This may include alternative use value in the case of real estate. In respect of plant & equipment such a value should assume that the assets will be sold for removal (commonly referred to as net realisable value).

1.4 Assets included

Where the income approach has been used to assess the market value of a going concern business, the value determined will include all the assets used in the business, including tangible and intangible assets and liabilities (to the extent they are used to derive income).

Tangible assets may include real property and plant and equipment, and intangible assets may include business licenses, patents, patterns, designs, intellectual property, goodwill, etc.

Depending upon the purpose of the valuation, an apportionment of value to the various asset classes may be required.

2. TEST OF ADEQUATE POTENTIAL PROFITABILITY/SERVICE POTENTIAL

As a basic premise, the market value determined for the property plant and equipment should be supported by the cash flows of the business.

IVGN8 (which covers depreciated replacement cost valuations for financial reporting purposes) requires that:

"Where the value of a specialised asset is estimated by the depreciated replacement cost method, a statement should be made that it is subject to a test of adequate potential profitability in relation to the whole of the assets held by a for-profit entity or cash generating unit".

"For not-for-profit public sector entities, the reference to a test of adequate profitability is replaced by a test of adequate service potential."

This statement is important as it is intended to alert the reader of the valuation to the fact that the valuation assumes and is dependent upon (i.e. Subject to) the reporting entity being profitable (i.e. Having adequate potential profitability), or in the case of not for profit entities, continuing to provide the service for which the asset is used (i.e. Having adequate service potential).

Valuations of assets contained in a business that assume continuation of the going concern business or service should not be construed as representing the market value of those assets in the event that the going concern business or service ceases to exist.

When assessing market value under the cost approach, the test of adequate potential profitability (or service potential) has traditionally been seen as the responsibility of the entity's directors or auditors.

However Members may complete the test of adequate potential profitability (or

service potential) rather than reporting a value subject to that test being completed by others.

It should be noted that existing guidance provided in respect of the test of adequate profitability is restricted to valuations for financial reporting purposes completed using the cost approach (IVGN 8). The test of adequate profitability is effectively used as a means to identify the potential existence of economic obsolescence. However, economic obsolescence is a matter that should be considered in many valuations that are completed using the cost approach.

It should be noted therefore that if a Member does not include the statement that the valuation is reported subject to the test of adequate profitability (or service potential), the valuation may be construed as reflecting all forms of obsolescence (including economic obsolescence).

A valuation that reflects profitability or service potential as described in this guidance note will result in an opinion of market value. By implication therefore a valuation that does not consider and reflect profitability (economic obsolescence) or service potential will not result in an opinion that represents market value until such tests have been completed.

3. HIGHEST AND BEST USE

In undertaking market valuations of property, plant and equipment as part of a going concern business Members should consider whether the current use of those assets represents their highest and best use.

If an asset potentially has a higher and better use, Members may need to assess and report the value of the asset for its alternative use, but in doing so Members should also consider the costs that may be incurred in changing use or decommissioning the asset as well as the potential impact on the future use and therefore value of other interdependent assets.

ANZVGN2 Valuations for Mortgage and Loan Security Purposes requires that where assets have a lower value for alternative uses the Member should report both values. It is noted however that circumstances may occur where the agreed scope of work does not include that requirement.

4. VALUATION METHODS

In assessing valuations of property, plant and equipment as part of a going concern business, the sales comparison approach, cost approach and income approach are all considered appropriate methods of valuation depending on the nature of the assets and the information available.

4.1 Sales comparison approach

It is generally difficult to find and analyse sales of specialised property, plant and equipment. Such assets are usually sold as part of the going concern business along with all its other tangible and intangible assets and liabilities. They may also be sold as part of a group or portfolio of assets and as a result apportionment of the business acquisition price to the various assets may not be available or reliable.

Where comparable sales evidence exists for real property being transacted as part of a going concern business, the sales comparison approach can be used to determine the value to an owner occupier. The value of the property for its alternative use or value with vacant possession may be different.

The implication for Members is that comparable sales of properties sold for redevelopment or with vacant possession may not provide a true indication of the value of a property for use as part of a going concern business.

In some cases the value as part of a going concern business may be lower than the property's value for its highest and best use. IVS 1, 2 & 3 require valuations to be assessed on a highest and best use basis, but Members should consider possible costs that may be incurred in changing the use of the asset as well as the potential impact on the use and therefore value of other inter-dependent assets.

For plant and equipment this may mean assessing the value of individual assets or production units on a comparable sales basis and weighting that value

for installation and any enhancements/ modifications.

The comparable sales should be adjusted to reflect any variations from the subject asset.

In some cases it may be appropriate to use a combined approach to value: the sales comparison approach (where comparable sales can be found) and the cost approach for the installation component that brings those assets into use within the business.

In applying the cost approach to the installation component of an asset's value, Members should take into account any obsolescence in order to determine the depreciation to be applied to the installation cost component.

Members should also have regard to the market place by understanding the context of each sale and should be aware of, but not rely upon, asking prices for equivalent assets in developing a complete understanding of the market place.

4.2 Cost approach

The cost approach is the most commonly used valuation method to determine the value of specialised assets. Under the cost approach the current replacement cost is calculated and then any loss in value caused by physical deterioration and functional and economic obsolescence is deducted to arrive at the market value of the asset.

4.2.1 Forms of obsolescence:

The Member should consider three forms of obsolescence:

1. Physical deterioration. This is the loss in value resulting from the consumption of the useful life or service potential of the asset caused by wear and tear, deterioration, exposure to various elements, physical stresses, and similar factors.
   a. It should be noted that the consumption of the useful life or service potential of an asset may be constant over the life of an asset and on other occasions this may occur more quickly at the beginning or at the end of the asset's life. This can result from variations in the intensity of use to which the asset is subjected at different stages of its life. These variations in the consumption of useful life or service potential of an asset will likely be reflected by variations in the level of maintenance costs.
   b. The useful life of an asset may be expressed in terms of years of service but may also be expressed in terms of units of production. When assessing remaining useful life Members should have regard to the condition of the asset at the time of assessment which may alter the total life of the asset as compared to its expected life when new.
2. Functional (sometimes called technological) obsolescence is the loss in value resulting from inefficiencies in the subject asset compared to a more efficient or less costly asset. Such excess operating costs and/or excess capital costs can be used to measure the extent of functional obsolescence.
3. Economic obsolescence (sometimes called external obsolescence) is the loss in value caused by factors which are external to the asset itself. Such factors often relate to the economics of the industry in which the business operates or the business in which it is employed. New legislation (or fear/ risks of it) may also contribute to economic obsolescence.
   a. Economic obsolescence may result from over capacity. The replacement cost of a plant that has a capacity equal to need may be significantly lower than the reproduction cost of the plant as installed. The extent of economic obsolescence in these circumstances can be measured by comparing the reproduction cost of the subject assets to the replacement cost of the assets required to meet the expected demand. If the plant's capacity is limited by an asset within the plant rather than by external factors then the obsolescence may be regarded as technological (i.e. Functional) and may be curable.
   b. Economic obsolescence can also be a result of other external factors such as increased raw material costs or reduced product sales/ value. These factors may be specific to a particular location or more generally experienced throughout an industry sector.
   c. It is important when investigating the impact of economic obsolescence that Members understand and consider the connection with the profitability of the business. This might be evident from the acquisition price (in a business transaction scenario), or reported business value. To the extent that a contemporaneous transaction involving the sale of the going concern business indicates a lower value than that of the property, plant and equipment used by that going concern business, this may provide an indication of economic obsolescence.
   d. Economic obsolescence may also be observed for some assets (predominantly real estate) by considering whether the going concern business could afford to pay a market rent for the assets and still return a profit.

Having regard to the various forms of obsolescence discussed above, Members should be wary of using depreciation tables which only reflect physical deterioration or methods which purport to represent all forms of obsolescence in one calculation without having regard to the circumstances and use of each asset.

In the case of new businesses, the sum

of the market value of the assets may indicate the business is yet to achieve a level of profitability which provides an appropriate return on the assets employed and capital outlay. The test of adequate profitability (or economic obsolescence) will therefore necessarily have regard to a longer term projection of expected cash flows rather than those experienced in the start-up phase.

Observation and analysis of sales of comparable businesses may be helpful in determining whether the subject business can support the assessed values of the tangible assets.

It is recognised that Members may not have access to the information necessary to determine the value of a business as a going concern however it is prudent to investigate factors that may indicate economic obsolescence and discuss these with the client prior to drawing a conclusion as to the value of the assets. For instance it would be prudent for Members to inform themselves of the details of relevant discoverable information (such as a recent sale of the going concern business that owns the assets) which might alert the Member to the possible existence of economic obsolescence.

Members should be careful to individually assess all forms of obsolescence for each asset as different assets within the same business may be impacted differently by obsolescence.

Valuations determined having regard to all three forms of obsolescence under the cost approach will result in an unqualified opinion of market value of the asset.

In applying the cost approach to real property, the Member should assess the market value of the land and add the value of the improvements after assessing all forms of obsolescence (including economic obsolescence).

4.2.2 Guidance on the identification and quantification of obsolescence

Specialised assets are rarely leased and therefore, it is difficult to identify market rental income or income capitalisation rates from the market.

Whilst these assets are typically used to produce income, the income that is produced is consolidated in the overall business enterprise income and as such is produced by a combination of real estate, plant and equipment, and intangible assets functioning together as an integrated going concern business.

It is often difficult therefore to separate this business enterprise income into the particular components that represent income in respect of the individual tangible assets.

Specialised assets do not sell regularly in the secondary market and as a result it is difficult to identify and analyse comparable sale transactions.

Transactions involving the sale of specialised assets are relatively infrequent and when they do occur, the property, plant and equipment are sold as part of a going concern business. In such situations, the individual values attributable to the property, plant and equipment are typically not disclosed to the marketplace.

In some cases Members may have access to contracts of sale that provide an indication of the values attributed by the parties to the transaction to the individual assets. However such allocations may be arbitrary or influenced by other considerations such as tax and as a result may not be a true reflection of the value of each component.

For these reasons, the cost approach is commonly used to value specialised assets. The identification and quantification of all forms of obsolescence is a fundamental procedure in a cost approach valuation.

The quantification of functional and economic obsolescence is however often challenging for the following reasons:

- It is difficult to visually identify the existence and effects of functional and economic obsolescence.
- The data needed to quantify some forms of obsolescence are often only available from the owner of the assets and therefore independent verification may be difficult.
- With regard to economic obsolescence, the causes of the obsolescence are, by definition, factors that are external to the subject asset.
- The identification and quantification of some forms of obsolescence is often comparative in nature and therefore requires data in respect of both the subject asset and comparable assets.

Functional and economic obsolescence may be identified from reviewing financial documents or operational reports but may also be identified from comparison with and knowledge of comparable assets.

With regard to economic obsolescence, it will most likely be necessary to analyse asset-specific financial data in order to identify the causes of obsolescence.

Negative movements in gross margin can also be an indicator of economic obsolescence. The gross margin is represented by the difference between a business' revenues and its cost of raw materials.

These inputs can be measured using

units of production where the current year's gross margin can be compared to previous years.

Functional obsolescence
Common examples of functional obsolescence include:

- Excess operating/maintenance costs
- Excess capital costs
- Examples of excess operating costs include:
- The subject asset may require ten operators while a comparative asset only requires five.
- The subject asset may produce ten units per period while a comparable asset produces twenty units per period.
- The subject asset may produce more scrap/waste material than a comparative asset.

In each case the present value of the excess operating costs in terms of labour, efficiency or raw materials is used to arrive at a measure of functional obsolescence.

An example of excess capital costs is where the subject asset is considered to be over-engineered for its required function. This can arise where methods (and costs) of construction or materials of construction have improved (reduced) since the subject asset was originally put into service.

Functional obsolescence can be quantified and captured by:

- Reducing value by an amount equal to the present value of the excess operating costs embodied in the subject asset(s)
- Reducing value by an amount equal to the excess capital cost embodied in the subject asset(s)
- Reducing value by an amount equal to the estimated capital costs to cure the functional deficiency embodied in the subject asset(s)

Economic obsolescence
Economic obsolescence relates to a decrease in the value of an asset due to influences that are external to the subject asset and occurs when the asset owner can no longer earn an appropriate rate of return on the ownership/operation of the subject asset, (i.e. the asset does not meet the test of adequate potential profitability).

It is acknowledged that economic obsolescence is typically the hardest form of obsolescence to identify and quantify.

Because economic obsolescence is usually a function of external factors that affect an entire going concern business (i.e. All tangible and intangible assets) rather than individual assets, it is sometimes measured using the income approach or by using the income approach to help identify the existence of economic factors that may be having an impact on value.

When the operating level of an asset is significantly lower than its capacity, and this situation is expected to continue for the foreseeable future, this form of economic obsolescence can be measured using the cost approach.

In its simplest form this can be measured by adopting the cost-to-capacity concept. The economic obsolescence penalty can be calculated on a percentage basis by comparing the actual operating level to the rated capacity using the cost-to-capacity concept. The penalty factor is deducted after physical deterioration and functional obsolescence because economic obsolescence is independent of the asset(s).

This is based on the logic that a prudent purchaser will only pay for capacity that can be used profitably.

It should be noted that the cost of assets of different capacities tends to vary exponentially rather than linearly because of economies of scale.

For example, in the case of plant & equipment, the cost of a conveyor of 100 metres in length will typically be less than twice the cost of a conveyor of 50 metres in length (all other things being equal) due to the economies of scale available in constructing a larger asset.

4.3 Income approach
In assessing valuations of real property assets as part of a going concern business, capitalisation and discounted cash flow analysis (cash inflows and outflows) may be appropriate methods of valuation.

Whilst direct market evidence of sale prices may not exist for specialised assets, Members may use other market evidence or benchmarks to assess the value of assets as part of a going concern business, either in their entirety or as individual components.

Examples may include assessment of rents of specialised assets having regard to likely returns required within the market for assets employed within similar industry sectors.

In other cases capitalisation of net profit may be appropriate to assess the value of the entity as a going concern however Members are cautioned that valuations assessed on this basis include both tangible and intangible assets, and an apportionment may be required (refer Section 1.4).

There are few instances where the income approach can be used to value individual plant and equipment assets without also capturing other assets such as intangibles and working capital. The income approach may be able to be utilised for leased plant and equipment assets that generate an income stream or a group of assets that can produce a saleable product.

It is recognised however that it is rarely possible to identify an income stream and allocate it to individual assets. As a result, it is generally very difficult, if not impossible, to assess values for individual assets by reference to the income approach. It is also arguable that any cash flow based valuation will, by default, include more than just the plant and equipment assets.

5. EFFECTIVE DATE

This Guidance Note is effective from 1 August 2011. ■

Member Spotlight

'Member Spotlight' is an initiative of the API to highlight the success and innovation of its members. A different API member will be featured each quarter, focusing on their achievements, challenges and future goals.

Story by: Kelli Wells

Chasing success

This month's member spotlight is on Julie Esparon (nee Kearns), Group Property Manager of Larkfield Estate.

CHANGING careers is not for the faint hearted. But for API member Julie Esparon (nee Kearns), having the courage to pursue another career path has paid off handsomely in both job satisfaction and professional success.

Having worked in 5-star hotel front office management, Julie changed focus and followed her ambitions to move into the real estate industry. She is now regarded as an innovative leader in her field.

In fact, Julie's success is so highly regarded that the API has invited her to become a Fellow of the Institute through its Property Leaders Program.

The program involves distinguished property industry leaders being invited to join the Institute at Fellow level for 12 months and gain benefits normally available only to an elite few.

Julie's rapid career climb has led her to present roles as Group Property Manager of Larkfield Estate, and Resource Manager and Sole Director of the Professional Commercial Property Managers Association (PCPMA), formerly known as CPMN (Commercial Property Managers Network).

Her role as Group Property Manager for Larkfield Estate involves the management of industrial sites and office buildings where she is leasing manager of 32 warehouses, and boasts speciality areas including commercial lease management, leasing management, building compliance and budget re-forecasting.

Julie's property management position also incorporates the functions of Victorian Building Regulations and OH&S compliance manager, essential safety measures contract manager, and lease terms and conditions manager.

She has been in the job for almost five years and cites relationship management as the most important element of the position.

"Relationship manager is on the top of the list, as creating and maintaining relationships with tenants, leasing agents, industry peers and local authorities is fundamental to successful property asset management," Julie said.

A self-described 'career' property manager, Julie is motivated to protect her future in her chosen field and strives to foster ethics, pride and technical competency in her industry.

This was the impetus behind forming the PCPMA in May 2008, of which she is a founding member.

After being involved with successful bi-monthly meetings for 18 months, Julie assumed sole responsibility for the network group.

"I source industry specialists to provide practical education and training currently not being provided by existing industry organisations.

"Currently, we (Commercial Property Managers) are relying on service providers to educate us in Victorian Building Regulations and the OH&S Act which is more often than not biased toward up-selling to a service we don't really need, that is beyond the legal minimum required".

Photo Ted McDonnell

"Armed with knowledge, building owners and agents have the power to determine what is required and how to address it," she said.

So why the change in occupation from hotel office management to real estate?

"I sought a change of pace and an increase in income. This was achieved by working in the suburbs in an autonomous role within a 'family office'.

Changing vocation at the age of 33 and doubling her income is one of the achievements Julie is most proud.

Another is providing commercial property managers access to practical educational information, in particular helping demystify the legal minimum required by building owners for Victorian Building Regulations compliance.

Julie said she has gained a great deal of satisfaction from the broad skill-set a property manager must acquire to perform their job.

"The breadth of practical knowledge is valuable to your personal life," she said.

"We become skilful in people managing, communication, property investment, property maintenance and legal issues.

"The role can be challenging however it is rewarding once you get past the 'fire fighting' stage in managing a valuable property portfolio."

No job is without its difficulties, and Julie says creating an in-house solution to building compliance and sourcing a home (industry organisation) for professional commercial property managers is one of her biggest challenges.

Julie's career history is striking testament to her capabilities and professionalism. But how does she define success?

"Success is believing in yourself and in the direction in which you are going. For me, success is most definitely contentment and satisfaction with my choices rather than respectfully comparing the accomplishments or style of others," Julie said.

Although the inbox will never be empty and multiple tasks and projects are always on the go at the same time, Julie believes that with a systematic approach the role of the commercial property manager can be more rewarding than challenging.

"Once you know the facts, an issue or process may be easier to manage. Through the API we hope to develop and document standard processes to address common recurring issues."

Julie sees API membership as an important support network that has a significant role to play in the development of best practice policy for property managers.

"Ideally, the API will assist property managers develop best practice industry policy and procedures so that we are not all working on them in isolation," Julie said.

"This can allow time for property managers to grow in other areas that might be more rewarding, such as relationship management, legal aspects and negotiation.

She said the API could further the professional career path of commercial property managers by further building on ethics, pride and technical competency.

Julie added that being part of a member organisation such as the API had provided a "long overdue" opportunity to access technical education and training for commercial property managers.

Would she recommend that other property managers become API members?

"Absolutely. It is a learning environment as well as a professional networking opportunity."

So what does the future hold for Julie? She said she was looking forward to fine tuning and automating in-house procedures for Larkfield so she could spend more time on negotiation, research and legal issues.

She also looks forward to her involvement in the API Property Leaders Program, which she believes is a rewarding initiative for property industry professionals.

Photo Ted McDonnell

AUSTRALIAN PROFESSIONAL CARDS

AUSTRALIAN CAPITAL TERRITORY

OPTEON™
PROPERTY GROUP
JAMES BRENNAN - AAPI
COL PINK - AAPI
+ 6 other CPV's

Valuation of all property types
- Property advice
- Asset valuations
- Insurance valuations
- Quantity surveying
- Plant & machinery

T | 1300 733 693 F | 1300 730 288 www.opteonpropertygroup.com.au

---

Colliers

COLLIERS INTERNATIONAL CONSULTANCY AND VALUATION
Ground Floor, 21-23 Marcus Clarke Street,
Canberra City ACT 2601
Ph: 02 6257 2121 Fax: 02 6225 7350

Paul Powderly	AAPI	State Chief Executive
Matthew Curtis	AAPI	Director
Robert Rixon	AAPI	Director
Tim Mutton	AAPI	Associate Director

Certified Practising Valuers **www.colliers.com.au**

---

egan

Carolyn Mowbray	*AAPI CPV*	EGAN NATIONAL VALUERS (ACT)
Sandra Howells	*AAPI CPV*	9/10 Kennedy Street, Kingston ACT 2604
Nicolas Lesle	*PMAPI RPV*	PO Box 6214, Kingston ACT 2604
		t 02 6232 7555 **f** 02 6232 7772
		w www.eganvaluers.com.au

Adelaide Canberra Melbourne Perth Sydney Auckland

NEW SOUTH WALES

MVS VALUERS

Sydney **Suite 1403, 115 Pitt Street**
Sydney NSW 2000
Ph: 1300 793 687 Fax: 1300 793 688
Email: valuer@mvsvaluers.biz
Andrew Cowie AAPI
Peter Raptis FAPI
George Boulougouris AAPI

Rockdale **Suites 8 & 9/8 Ashton Square**
Cnr Princes Highway & Rockdale Plaza Drive
Rockdale NSW 2216
Ph: 1300 793 687 Fax: 1300 793 688
Email: residential@mvsvaluers.biz
Ian Bolewski AAPI

Newcastle **Suite 3, Level 5, 45 Hunter Street,**
Newcastle NSW 2300
Ph: 1300 137 018 Fax: 1300 137 019
Email: newcastle@mvsvaluers.biz
George Boulougouris AAPI

www.mvsvaluers.biz

---

david collier property consulting

Valuers, Advisors, Advocates & Agents

ANDREW COLLIER AAPI
andrew@dcpc.net.au
0414 775 243

DAVID COLLIER
david@dcpc.net.au
0414 251 280

14 View Street Woollahra NSW 2025
www.dcpc.net.au

NEW SOUTH WALES

Daniel Hogg, AAPI, Director

Preston Rowe Paterson Albury Wodonga Pty Ltd
Level 1, Suite 4, 520 Swift Street, Albury NSW 2640
PO BOX 7144, Albury NSW 2640 E daniel.hogg@prp.com.au
T (02) 6041 1362 F (02) 6100 2745 www.prpaustralia.com.au

PRP Preston Rowe Paterson
National Property Consultants

---

wkw

David Curtis AAPI
Mobile 0407 778 954

Wolton Curtis & Partners
Suite 2/271 Brunker Road
Adamstown NSW 2289
PO Box 273 Newcastle NSW 2300
Phone +61 2 4978 7808
Fax +61 2 4978 7899
Email david@wkw.com.au

Real Estate Valuers • Property Consultants • Real Estate Asset Managers

---

BEM PROPERTY Consultants & Valuers

Ian Blackall FAPI **Steve Eccleston** FAPI
Paul McBurnie FAPI **Richard Montague** AAPI

Level 4, 12 Mount Street, North Sydney
Po Box 1741, North Sydney NSW 2059
Ph: 02 8920 3044 Fax: 02 8920 3055
Email: admin@bemproperty.com.au
www.bemproperty.com.au

Knight Frank Newcastle

Sean Fox, AAPI
John Harrington, AAPI
Ross Cooper, AAPI

Suite 2, Ground Floor, 400 Hunter St, Newcastle NSW 2300
Phone (02) 4920 5700 Fax (02) 4927 1755

Knight Frank
www.knightfrank.com.au

Gregory Preston, LFAPI, Director
Gregory Rowe, FAPI, Director
Ben Greenwood, AAPI, Associate Director
Robert Timmermans, AAPI, Associate Director
Neal Smith, AAPI, Associate Director
Ben Toole, AAPI, Associate Director
Greg Mason, AAPI, Associate Director
Kath Hewison, MRICS, Associate Director
Rachel Cooper, AAPI, Associate Director

PRP Preston Rowe Paterson
National Property Consultants

Preston Rowe Paterson NSW Pty Ltd Level 11, 80 Clarence St, Sydney NSW 2000
T (02) 9292 7400 F (02) 9292 7403 E mailroom@prpnsw.com.au www.prpaustralia.com.au

---

OPTEON™
PROPERTY GROUP

T | 1300 733 693
F | 1300 730 288
www.opteonpropertygroup.com.au

Valuation of all property types
- Property advice
- Asset valuations
- Insurance valuations
- Quantity surveying
- Plant & machinery

STATE DIRECTOR - JAMES SMITH AAPI
+ 65 other CPV's

Incorporating the practices of:
- Addisons-Opteon
- Benchmark-Opteon
- Bennett Frogley-Opteon
- Bolton Connolly-Opteon
- Coastal Valuations-Opteon
- Hunter Valuation-Opteon
- Jeffrey Reid Flanagan-Opteon
- Southern Valuers-Opteon
- Tremain Prowse-Opteon

NSW Offices in: SYDNEY | ARMIDALE | BALLINA | BATEMANS BAY | BATHURST | BYRON BAY | COBARGO | GRIFFITH | KIAMA | MAITLAND | MOREE | ORANGE | NARELLAN | NEWCASTLE NOWRA | PORT MACQUARIE | TAMWORTH | ULLADULLA | WAGGA WAGGA | WOLLONGONG

AUSTRALIAN PROFESSIONAL CARDS

NEW SOUTH WALES

Robert Dupont, FAPI, Director
David Rich, AAPI, Director
Joshua Smith, AAPI, Director

Preston Rowe Paterson Newcastle and Central Coast Pty Ltd
(Previously Duponts Valuers, Property Research)
98 Hannell Street, Wickham NSW 2293
PO Box 1740, Newcastle NSW 2300 E mail@prpncle.com.au
T (02) 4922 0600 F (02) 4922 0688 www.prpaustralia.com.au

PRP Preston Rowe Paterson
National Property Consultants

COLLIERS INTERNATIONAL CONSULTANCY AND VALUATION

Level 12, Grosvenor Place
225 George Street, Sydney NSW 2000
Ph: 02 9257 0222 Fax: 02 9347 0794

William Doherty	AAPI	Managing Director
Dwight Hillier	AAPI	National Director
Michael Thomson	AAPI	National Director - Hotels and Leisure
Edward Watts	FAPI	Director

Level 42, Northpoint
100 Miller Street, North Sydney NSW 2060
Ph: 02 9957 6611 Fax: 02 9957 2990

Michael Pisano	AAPI	Director

Level 5, Airport Central Tower
241 O'Riordan Street, Mascot NSW 2020
Tel: 02 9317 4888 Fax: 02 9317 4974

James Bellew	AAPI	National Director
Peter Blakeley	FAPI	National Director - Industrial

Level 8, 20 Smith Street, Parramatta NSW 2150
Tel: 02 9840 0222 Fax: 02 9635 8916

Russell McKinnon	AAPI	National Director
Robert Fischer	AAPI	Director
Paul Moschione	AAPI	National Director - Healthcare and Retirement Living

Suite 3, Nautilos
265 Wharf Road, Newcastle NSW 2300
Tel: 02 4926 4888 Fax: 02 4926 4555

Peter Macadam	AAPI	Director
Ben Player	AAPI	Associate Director

Level 1, 331 High Street, Penrith NSW 2750
Tel: 02 4702 0100 Fax: 02 4731 1779

Russell Briggs	FAPI	Director
Dennis Rylaarsdam	AAPI	Senior Valuer - Extractive Industries and Waste Management

Certified Practising Valuers **www.colliers.com.au**

Knight Frank Valuations
Keith L GODDARD, FAPI • David M CASTLES, FAPI
Tom M PHELAN, FAPI • Anthony W ALFORD, FAPI

Knight Frank

Level 18, 123 Pitt Street, Sydney	**Phone (02) 9036 6772**	**Fax (02) 9036 6770**
Level 9, 2 Elizabeth Plaza, North Sydney	**Phone (02) 9028 1134**	**Fax (02) 9028 1198**
Level 3, 3 Horwood Place, Parramatta	**Phone (02) 9761 1871**	**Fax (02) 9761 1870**

www.knightfrank.com.au

Michael Redfern, AAPI, Director

Preston Rowe Paterson Wagga Wagga Pty Ltd
53 Dalkeith Avenue Wagga Wagga NSW 2650
E michael.redfern@prp.com.au T 0428 235 588
F (02) 6100 2745 www.prpaustralia.com.au

PRP Preston Rowe Paterson
National Property Consultants

M J DAVIS VALUATIONS Pty Limited

MJ DAVIS VALUATIONS
Consulting Valuers

Colin Sorrenson FAPI
Anthony Looby FAPI

293 Macquarie Street, Liverpool, NSW 2170
Phone: (02) 9601 2500 Email: admin@mjd.net.au

NEW SOUTH WALES

67 Grey Street • South Brisbane QLD 4101
GPO Box 1776 • Brisbane QLD 4001
www.taylorbyrne.com.au

TAYLOR BYRNE
VALUERS & PROPERTY CONSULTANTS

Directors:
C Caleo
T Bartholomew
D Burley
T Cavanagh
J Clune
D Duffield
G Duffield
B Guest
L Hamilton
S Herbert
R Hewitt
A Hoolihan
C Lando
J Lyons
P Lyons
T Rabbitt
P Turner

RESIDENTIAL • COMMERCIAL • RURAL • INDUSTRIAL
RETAIL • LITIGATION • FAMILY LAW • ACQUISITION

Offices in:

QUEENSLAND
Brisbane • Cairns • Emerald • Gladstone • Gold Coast • Hervey Bay • Kingaroy • Mackay • Rockhampton • Roma • Sunshine Coast • Toowoomba • Townsville

NEW SOUTH WALES
Ballina • Coffs Harbour • Grafton • Inverell • Lismore • Port Macquarie

---

Robert Dupont, FAPI, Director
David Rich, AAPI, Director
Joshua Smith, AAPI, Director

Preston Rowe Paterson Newcastle & Central Coast Pty Ltd
(Previously Duponts Valuers, Property Research)
Suite 4, Level 1, 119 Mann St, Gosford NSW 2250
PO Box 1740, Newcastle NSW 2300 E mail@prpcch.com.au
T (02) 4324 0355 F (02) 4324 0356 www.prpaustralia.com.au

PRP Preston Rowe Paterson
National Property Consultants

---

wkw

Wayne Wotton FAPI
Mobile 0408 933 365
Carly Jones AAPI
Mobile 0407 262 680

WK Wotton & Partners ABN 72 080 750 476
Suite 49 Upper Deck Jones Bay Wharf
26-32 Pirrama Road Pyrmont NSW 2009
Phone +61 2 9552 6533
Fax +61 2 9552 6433
Email wayne@wkw.com.au

• Real Estate Valuers • Property Consultants • Real Estate Asset Managers

---

VALUATIONS | RESIDENTIAL & COMMERCIAL ADVICE | PROPERTY MANAGEMENT

Chris Lackey *AAPI* - State Manager NSW Ken Adams *AAPI* - Senior Valuer

Residential & Commercial Property Valuations for all purposes

visit www.wbpproperty.com

Ph: 1300 302 581
Fax: 1300 886 545
Email: info@wbpproperty.com

WBP PROPERTY GROUP

C. A. BROWN ASSOCIATES
Member of the Network Property Group

82 BALO STREET, MOREE
Northern NSW – Southern QLD Area
Phone: (02) 6751 1100 Fax: (02) 6751 1766
Email: cabrownassoc@northnet.com.au
Paul D. Kelly AAPI – 0428 281 482
Clifford A. Brown FAPI – 0428 669 173

---

egan

Terry Large	*FAPI*
Geoff McGuirk	*AAPI*
Paul Chaloner	*AAPI*
Kris Criker	*AAPI*

EGAN NATIONAL VALUERS (NSW)
Level 2, 5-13 Rosebery Avenue,
Rosebery NSW 2018
t 02 9662 3700 **f** 02 9662 3304
w www.eganvaluers.com.au
Adelaide Canberra Melbourne Perth Sydney Auckland

PROPERTY VALUATION BUSINESS

Call 1300 88 60 35 or visit WWW.VALUEPRO.COM.AU

AUSTRALIAN PROFESSIONAL CARDS

NORTHERN TERRITORY

COLLIERS INTERNATIONAL CONSULTANCY AND VALUATION
Level 2, Deloitte Centre, 62 Cavanagh Street, Darwin NT 0800
Tel: 08 8941 0055 Fax: 08 8941 7924

Tony West	FAPI	Director
Poasa Raqiyawa	AAPI	Valuer
Ili Raqiyawa	AAPI	Valuer
Tim Selby	AAPI	Valuer
Alex Maher	GAPI	Valuer

Certified Practising Valuers **www.colliers.com.au**

QUEENSLAND

Knight Frank Valuations Queensland
Level 11, AMP Place, 10 Eagle Street, Brisbane 4000
T: 07 3246 8888 F: 07 3229 5436

Philip Willington, FAPI
Paul Kwan, AAPI
Peter Zischke, AAPI
Samantha Macann, AAPI
Gordon Price, AAPI
Richard Nash, AAPI
Riwa Kwan, AAPI
Daniel Billiau, AAPI
Ian Gregory, AAPI
Timothy Uhr, AAPI
Tim O'Sullivan, AAPI
Michael Vanarey, GAPI

www.knightframk.com.au

QUEENSLAND

Brisbane
2B/96 Lytton Road
East Brisbane QLD 4169
Ph: 1300 737 687 Fax: 1300 737 688
Email: mvs.qld@mvsvaluers.biz
www.mvsvaluers.biz
Robert Pearson AAPI

Valuation & Advisory Services
Property Valuations

Tom Irving	AAPI	
Tristan Gasiewski	AAPI MRICS	
Dennis Morgan	AAPI	
Mel Evans	FAPI	
David Kernke	AAPI	
James Lister	AAPI	
Steven Frawley	AAPI	
Pia Pirhonen	AAPI	
David Long	AAPI	
Craig Guinane	AAPI	
Virginia Carlson	AAPI	
Andrew Sutton	AAPI	
Jared Armstrong	AAPI	
William Poole	AAPI	
Tim Winterflood	AAPI	
Baden Mulcahy	AAPI MRICS	***Hotels***
Jacqueline Reiser	AAPI	***Hotels***
Angela Buckley	AAPI	***Hotels***
Glen McGarry	AAPI	***Plant & Machinery***

CBRE
CB RICHARD ELLIS

CB Richard Ellis (C) Pty Ltd
Level 33, Waterfront Place,
1 Eagle Street, Brisbane
Qld 4000
T: 61 7 3833 9833
F: 61 7 3833 9830
www.cbre.com.au

Chris Kogler, AAPI, Director
Ray Allsop, AAPI, Director
Michael Cook, AAPI, Director

PRP Valuers and Consultants Gold Coast Pty Ltd
PO BOX 9280, Gold Coast Mail Centre QLD 9726
E mailroom@prpgc.com.au T (07) 5574 2599
F (07) 5574 2533 www.prpaustralia.com.au

PRP Preston Rowe Paterson
National Property Consultants

Robert Cowell, AAPI, Director

Preston Rowe Paterson Cairns Pty Ltd
29-31 Spence Street, Cairns QLD 4870
PO BOX 7505, Cairns QLD 4870 E cairns@prp.com.au
T (07) 4031 9552 F (07) 4031 9556 www.prpaustralia.com.au

PRP Preston Rowe Paterson
National Property Consultants

OPTEON™
PROPERTY GROUP

T | 1300 733 693
F | 1300 730 288
www.opteonpropertygroup.com.au

Valuation of all property types
- Property advice
- Asset valuations
- Insurance valuations
- Quantity surveying
- Plant & machinery

STATE DIRECTOR - JONATHON BLOXSOM AAPI
+ 45 other CPV's

Incorporating the practices of
- Planet Valuations-Opteon
- Wide Bay-Opteon
- Collins & Eales-Opteon
- JD Dodds-Opteon

QLD Offices in:
Brisbane, Gold Coast, Mackay, Maryborough, Sunshine Coast, Townsville, Toowoomba

67 Grey Street • South Brisbane QLD 4101
GPO Box 1776 • Brisbane QLD 4001
www.taylorbyrne.com.au

TAYLOR BYRNE

Directors: VALUERS & PROPERTY CONSULTANTS

C Caleo
T Bartholomew
D Burley
T Cavanagh
J Clune
D Duffield
G Duffield
B Guest
L Hamilton
S Herbert
R Hewitt
A Hoolihan
C Lando
J Lyons
P Lyons
T Rabbitt
P Turner

RESIDENTIAL • COMMERCIAL • RURAL • INDUSTRIAL
RETAIL • LITIGATION • FAMILY LAW • ACQUISITION

Offices in:

QUEENSLAND
Brisbane • Cairns • Emerald • Gladstone • Gold Coast • Hervey Bay • Kingaroy • Mackay • Rockhampton • Roma • Sunshine Coast • Toowoomba • Townsville

NEW SOUTH WALES
Ballina • Coffs Harbour • Grafton • Inverell • Lismore • Port Macquarie

McCARTHY DURIE
LAWYERS
Partners in your success.

Marcus Johnson FAPI: Director
Lawyer and qualified Valuer.

Property law, commercial litigation, compulsory acquisitions, site value objections and planning appeals.

Cleveland | Capalaba | Brisbane CBD
07 3233 9999 W mccarthydurie.com.au

Troy Chaplin, AAPI, Director

Preston Rowe Paterson Queensland Pty Ltd
Suite 3, Level 1, 156 Boundary Street West End QLD 4101
E mailroom@prpqueensland.com.au T (07) 3846 2822
F (07) 3846 2833 www.prpaustralia.com.au

PRP Preston Rowe Paterson
National Property Consultants

ValuePRO **CONNECTING YOUR**

AUSTRALIAN PROFESSIONAL CARDS

QUEENSLAND

VALUATIONS | RESIDENTIAL & COMMERCIAL ADVICE | PROPERTY MANAGEMENT

Julian Harrison-Tubb *AAPI* - State Manager QLD

Residential & Commercial Property Valuations for all purposes

visit www.wbpproperty.com

Ph: 1300 302 581
Fax: 1300 886 545
Email: info@wbpproperty.com

WBP PROPERTY GROUP

SOUTH AUSTRALIA

COLLIERS INTERNATIONAL CONSULTANCY AND VALUATION

Level 10, Statewide House
99 Gawler Place, Adelaide SA 5000
Tel: 08 8305 8888 Fax: 08 8231 7712

Tony West	FAPI	Director
Jennifer Robertson	AAPI	Director – Healthcare and Retirement Living
Alex Thamm	AAPI	National Director – Rural and Agribusiness
Angus Barrington-Case	AAPI	Associate Director – Rural and Agribusiness

Certified Practising Valuers **www.colliers.com.au**

Knight Frank Valuations (SA)

James Pledge	FAPI	Zac Vartuli	AAPI
Alex Smithson	FAPI	Craig Barlow	AAPI
Nick Bell	AAPI	Mark Robins	AAPI
Jason Oster	AAPI		

+14 more Qualified Valuers

www.knightfrank.com.au

Knight Frank

Level 25 Westpac House
91 King William Street, ADELAIDE SA 5000
T: 08 8233 5222 F: 08 8231 0122
E:admin@sa.knightfrankval.com.au

Specialisations in Commercial, Residential, Hospitality, Health & Aged Care, Plant & Equipment and Rural Valuations

OPTEON™ PROPERTY GROUP

T | 1300 733 693
F | 1300 730 288
www.opteonpropertygroup.com.au

Valuation of all property types
- Property advice
- Asset valuations
- Insurance valuations
- Quantity surveying
- Plant & machinery

Incorporating the practices of:
- Landlink-Opteon
- CWM-Opteon

STATE DIRECTOR - MITCH UZELAC
+ 8 CPV's

SA Offices in: ADELAIDE | MOUNT GAMBIER

Rob Simmons, AAPI, Director

Preston Rowe Paterson Adelaide Pty Ltd
Suite 4, 2A Daws Road, Ascot Park SA 5043
E adelaide@prp.com.au T (08) 8277 0500
F (08) 8277 0533 www.prpaustralia.com.au

PRP Preston Rowe Paterson

National Property Consultants

savills

TIM TRNOVSKY FAPI
RON ASCHBERGER FAPI
ROB TAYLOR FAPI
DANIEL ROBINSON GAPI
ADRIAN ROWSE AAPI
HEATH DOWLING AAPI
ALASTAIR JOHNSTON AAPI

LEVEL 2, 50 HINDMARSH SQUARE
ADELAIDE SA 5000
TEL (08) 8237 5000 FAX (08) 8237 5099 www.savills.com.au
SYDNEY BRISBANE MELBOURNE PERTH ADELAIDE

SOUTH AUSTRALIA

VALUATIONS | RESIDENTIAL & COMMERCIAL ADVICE | PROPERTY MANAGEMENT

Bart Quinn *AAPI* - State Manager SA

Residential & Commercial Property Valuations for all purposes

visit www.wbpproperty.com

Ph: 1300 302 581
Fax: 1300 886 545
Email: info@wbpproperty.com

WBP PROPERTY GROUP

COLLIERS INTERNATIONAL CONSULTANCY AND VALUATION

Level 20, Central Plaza One
345 Queen Street, Brisbane QLD 4000
Tel: 07 3229 1233 Fax: 07 3229 1100

Troy Linnane	AAPI	Director
Craig Clayworth	AAPI	Director
Warren Galea	AAPI	Director

Level 2, Circle on Cavill
3184 Surfers Paradise Boulevard, Surfers Paradise QLD 4217
Tel: 07 5588 0088 Fax: 07 5592 1632

Stephen McDonald AAPI Associate Director

Certified Practising Valuers **www.colliers.com.au**

egan

Kym Dreyer	*FAPI*	EGAN NATIONAL VALUERS (SA)
Jeff Cottle	*AAPI*	Level 6, 76 Waymouth Street, Adelaide SA 5000
Neil Bradford	*AAPI*	**t** 08 8212 1755 **f** 08 8231 0286
Adrian Burg	*AAPI*	**e** adelaide@eganvaluers-sa.com.au
Susan Visser	*FAPI*	**w** www.eganvaluers.com.au

Adelaide Brisbane Canberra Melbourne Perth Sydney Auckland

TASMANIA

OPTEON™ PROPERTY GROUP

T | 1300 733 693
F | 1300 730 288
www.opteonpropertygroup.com.au

Valuation of all property types
- Property advice
- Asset valuations
- Insurance valuations
- Quantity surveying
- Plant & machinery

STATE DIRECTOR - SCOTT NEWTON FAPI
+ 45 other CPV's

Incorporating the practice of:
Brothers & Newton- Opteon
ESK Property

Servicing the whole of Tasmania with offices in:
- Hobart
- Devonport
- Launceston

SAUNDERS & PITT
Incorporating D. Saunders & Co. Established 1905

SAUNDERS & PITT

David Saunders B.Ec. Dip.Val. FAPI
Russell Cripps B.Bus Dip.Val. FAPI, AREI
Andrew Pitt Dip.Val. AAPI, AREI
Joe Stansfield B.Prop. AAPI

Certified Practising Valuers

14-16 Victoria Street, Hobart TAS 7000
Phone: (03) 6231 3288 Fax: (03) 6231 3688
Email: saunderspitt@bigpond.com

AUSTRALIAN PROFESSIONAL CARDS

TASMANIA

Damien Taplin AAPI CPV C.P.M. Tas
Managing Director
Mobile **0418 513 003**

Our Certified Practising Valuers provide professional specialist service to the Mortgage Industry.

www.tpcvaluers.com.au

TPC

5 Audley Street
North Hobart TAS 7000
Phone 03 6231 6688
Fax 03 62316788
Email valuations@tpcvaluers.com.au

VICTORIA

The Valuation Expert for
Hospitality, Tourism and Leisure
Telephone 61 3 9884 7336
Bob Butterworth FAPI

butterworth

www.butterworth.com.au

Darren Evans, AAPI, Director

Preston Rowe Paterson Ballarat Pty Ltd
27 Doveton Street North, Ballarat VIC 3350
E darren.evans@prp.com.au T (03) 5334 4441
F (03) 5334 4501 www.prpaustralia.com.au

PRP Preston Rowe Paterson
National Property Consultants

NATIONAL & INDEPENDENT PROPERTY SERVICES

VIC | NSW | QLD | WA | SA | TAS

- Property Valuations
  Residential and Commercial
- Residential Advice
- Commercial Sales & Leasing
- Commercial Property Management

Greville Pabst *FAPI FRICS* - CEO & Director Patrick Brady *AAPI MRICS* - Director

visit www.wbpproperty.com

WBP PROPERTY GROUP

Ph: 1300 302 581
Fax: 1300 886 545
Email: info@wbpproperty.com

AVA property

Level 1/501 Church Street Richmond VIC 3121
T 03 9428 7676 **www.avaproperty.com.au**

Nicholas Bond AAPI
Trevor Crittle AAPI
Andrew Kollmorgen AAPI
Nicholas Tassell AAPI
Chris Pulvirenti AAPI

Damian Kininmonth, FAPI, Director
Neal Ellis, AAPI, Director

Preston Rowe Paterson (Melbourne) Pty Ltd
Suite 6.02, 488 Bourke Street, Melbourne VIC 3000
E melbourne@prp.com.au T (03) 9602 1333
F (03) 9602 1337 www.prpaustralia.com.au

PRP Preston Rowe Paterson
National Property Consultants

VICTORIA

egan

Ben Driller	*AAPI*	EGAN NATIONAL VALUERS (VIC)
Michael Hosking	*FAPI*	Suite 4, Level 1, 400 High Street Kew VIC 3101
Jane Saffin	*AAPI*	PO Box 233 Kew VIC 3101
Malcolm Ashby	*AAPI*	**t** 03 9853 3300 **f** 03 9853 3341
		w www.eganvaluers.com.au

Adelaide Canberra Melbourne Perth Sydney Auckland

Tim Barlow, AAPI, Director
Alex Ellis, AAPI, Director

Preston Rowe Paterson Gippsland Pty Ltd
Suite 3, Powlett Arcade, 33 McBride Avenue,
Wonthaggi VIC 3995 E gippsland@prp.com.au
T (03) 5672 4422 (03) 5672 3388 www.prpaustralia.com.au

PRP Preston Rowe Paterson
National Property Consultants

ALISTAIR W. MALE
- DipAgSc, FAPI -
CERTIFIED PRACTISING VALUER & PROPERTY CONSULTANT
Victoria & New South Wales
32 Rowan Street, Wangaratta VIC 3677
Phone: (03) 5722 3144 Fax: (03) 5721 7746
ALSO AT BRIGHT, MT. BEAUTY AND MT. HOTHAM

Colliers

COLLIERS INTERNATIONAL CONSULTANCY AND VALUATION

Level 32, Optus Centre
367 Collins Street, Melbourne VIC 3000
Tel: 03 9629 8888 Fax: 03 9629 8549

Jim Macey	AAPI	Director
Stephen Andrew	FAPI	National Director - Retail
John Conrick	AAPI	Director - Healthcare and Retirement Living
Ben McCallum	AAPI	Associate Director

Level 3, Building 3
195 Wellington Road, Clayton North VIC 3168
Tel: 03 8562 1111 Fax: 03 8562 1122

Chris Dupen	AAPI	Director
Julian Vautin	AAPI	Manager

Certified Practising Valuers **www.colliers.com.au**

Damian Kininmonth, FAPI, Director
Neal Ellis, AAPI, Director

Preston Rowe Paterson (Melbourne) Pty Ltd
Suite 17, 1140 Nepean Highway, Mornington VIC 3931
E mornington@prp.com.au T (03) 5975 0480
F (03) 5975 0427 www.prpaustralia.com.au

PRP Preston Rowe Paterson
National Property Consultants

ADVERTISE HERE

Contact the API on
02 6282 2411 or
Email: journal@api.org.au

ValuePRO **GO MOBILE** with iPhone,

AUSTRALIAN PROFESSIONAL CARDS

VICTORIA

Knight Frank Valuations

Knight Frank

Joseph Perillo	FAPI
David Way	MRICS AAPI
Michael Schuh	MRICS AAPI
Samuel Murphy	MRICS AAPI F Fin
Samantha Freeman	AAPI
David Keenan	AAPI
Chris Safstrom	AAPI
Yong-Fu Lim	AAPI
Natasha Alston	AAPI

Level 31
360 Collins Street
Melbourne VIC 3000

T: 03 9604 4600
F: 03 9604 4773
E: jperillo@vic.knightfrankval.com.au

www.knightfrank.com.au

Gareth Kent, AAPI, Director
Stuart Mcdonald, AAPI, Director

Preston Rowe Paterson Geelong Pty Ltd
5c Little Ryrie Street, Geelong VIC 3220
E geelong@prp.com.au T (03) 5221 9511
F (03) 5221 2265 www.prpaustralia.com.au

PRP Preston Rowe Paterson
National Property Consultants

OPTEON™ PROPERTY GROUP

T | 1300 733 693
F | 1300 730 288
www.opteonpropertygroup.com.au

Valuation of all property types
- Property advice
- Asset valuations
- Insurance valuations
- Quantity surveying
- Property law
- Plant & machinery

Incorporating the practices of:
- Landlink-Opteon
- Marketline-Opteon
- HMC-Opteon
- Opteon Victoria

STATE DIRECTOR - ANDREW NOSEDA AAPI
+ 125 other CPV's

VIC Offices in: MELBOURNE | BALLARAT | BENDIGO | COLAC | GEELONG | HAMILTON | MILDURA | PAKENHAM | PORTLAND | SEAFORD | SHEPPARTON SUNBURY | WANGARATTA | WARRNAMBOOL | WERRIBEE

BARTROP REAL ESTATE BALLARAT
REAL ESTATE AUCTIONEERS & VALUERS
BRUCE E. BARTROP, FAPI, FREI, ACIS
Certified Practising Valuer
50–54 LYDIARD ST STH, BALLARAT 3350
"A Real Estate Office Since 1876"
Phone: (03) 5331 1011 Fax: (03) 5333 3098
Email: realestate@bartrop.com.au

ADVERTISE HERE

Contact the API on
02 6282 2411 or
Email: journal@api.org.au

VICTORIA

Dowlings

John K Dowling FAPI FREI

K L Dowling & Co Specialist Valuers
Estate Agents & Property Managers

Valuations and Expert Evidence prepared for:
- Litigation
- Compensation
- Rental Determination
- Mediation & Arbitration
- Sale, purchase & loan security
- Insurance & general purposes

Second Floor, 415 Bourke Street, Melbourne 3000
Tel: 03 9600 0422 Fax: 03 9600 1402 Email: johndowling@kldowling.net.au

WESTERN AUSTRALIA

OPTEON™ PROPERTY GROUP

T | 1300 733 693
F | 1300 730 288
www.opteonpropertygroup.com.au

STATE DIRECTOR - MARK CHRISTIE FAPI
+ 65 other CPV's

Valuation of all property types
- Property advice
- Asset valuations
- Insurance valuations
- Quantity surveying
- Plant & machinery

Incorporating the practices of:
- Albany Valuation Services-Opteon
- Kimberley Valuers-Opteon
- Midwest Valuations-Opteon
- Quantia Pty Ltd

WA Offices in: PERTH | ALBANY | BROOME | BUNBURY DUNSBOROUGH | GERALDTON | KUNUNURRA | MANDURAH

---

egan

Gavin Chapman	AAPI
Blake Smith	AAPI
Gordon Jeanes	FAPI
Tim Anderson	FAPI
Paul Rogers	AAPI
Richard Hagon	AAPI

EGAN NATIONAL VALUERS (WA)
22 Hardy Street, South Perth, WA 6151
t 08 9474 1299 **f** 08 9474 1599
e egan@eganvaluers-wa.com.au
w www.eganvaluers.com.au
Adelaide Brisbane Canberra Melbourne Perth Sydney Auckland

API THE AUSTRALIAN PROPERTY INSTITUTE
Leading the property professions

advertising contact
national@api.org.au
02 6282 2411

---

iPad, Windows Mobile and Tablet software

Call 1300 88 60 35 or visit WWW.VALUEPRO.COM.AU

NEW ZEALAND PROFESSIONAL CARDS

AUCKLAND

CBRE
CB RICHARD ELLIS

REGISTERED VALUERS, PROPERTY CONSULTANTS, RESEARCH, PROPERTY MANAGEMENT, LICENSED REAL ESTATE AGENTS

Auckland CBD Office
Level 14, 21 Queen Street, Auckland
PO Box 2723, Auckland
Phone: +64 (09) 355 3333
Facsimile: +64 (09) 359 5430
Email: firstname.lastname@cbre.co.nz

Valuation & Advisory Services
Directors
Stephen Dunlop, B.Prop, SPINZ, ANZIV
Campbell Stewart, B.Prop, SPINZ, ANZIV
Patrick Ryan, BBS, SPINZ, ANZIV
Tim Arnott, B.Com, (VPM), MPINZ
Michael Gunn, B.Com, (VPM) SPINZ, ANZIV
Associate Directors
David Woolley, BBS, (VPM), MPINZ
Nicole Roche, B.Prop, B.Com (HONS), MPINZ, ANZIV

North Auckland Office
Unit 8, 35 Apollo Drive
Mairangi Bay, North Shore City,
PO Box 33-1080
Phone: +64 (09) 984 3333
Facsimile: +64 (09) 984 3330
Email: firstname.lastname@cbre.co.nz

Hotels & Leisure Valuation & Advisory Services
Director
Stephen Doyle, B.Prop, MPINZ, ANZIV
Associate Director
Shaun Jackson, BPA, SPINZ, ANZIV

South Auckland Office
Level 1, 7a Pacific Rise
Mt Wellington, Auckland
PO Box 11-2241, Penrose, Auckland
Phone: +64 (09) 573 3333
Facsimile: +64 (09) 573 3330
Email: firstname.lastname@cbre.co.nz

Valuation & Advisory Services
Director
Wouter Robberts, NDPV, MPINZ, ANZIV

Plant & Machinery Valuation
Mike Morales, SPINZ

Hamilton Office
Ground Floor, 155 Te Rapa Road
PO Box 1330, Hamilton
Phone: (07) 850 3333
Facsimile: (07) 850 8330
Email: firstname.lastname@cbre.co.nz

Valuation & Advisory Services
Director
Matt Snelgrove, SPINZ, ANZIV

Wellington Office
Level 12, ASB Tower,
2 Hunter Street, Wellington
PO Box 5053, Wellington
Phone: (04) 499 8899
Facsimile: (04) 499 8889
Email: firstname.lastname@cbre.co.nz

Valuation & Advisory Services
Director
Peter Schellekens, SPINZ, ANZIV
Associate Director
David Cook, SPINZ

Christchurch Office
Level 6, PricewaterhouseCoopers Centre
119 Armagh Street, Christchurch
PO Box 13-643, Christchurch
Phone: +64 (03) 374 9889
Facsimile: +64 (03) 374 9884
Email: firstname.lastname@cbre.co.nz

Valuation & Advisory Services
Directors
Chris Barraclough, B.Com, FPINZ, FNZIV
Marius Ogg, SPINZ, ANZIV

COLLIERS INTERNATIONAL NEW ZEALAND LIMITED

REGISTERED VALUERS, CONSULTANTS & PROPERTY ADVISORY

Level 27, 151 Queen Street, Auckland 1010.
PO Box 1631, Shortland Street, Auckland 1140.
Phone (09) 358 1888 Facsimile (09) 358 1999
Email firstname.surname@colliers.com Website **www.colliers.co.nz**

Andrew Stringer SPINZ, ANZIV National Director, Valuation & Advisory Services

S Nigel Dean DipUrbVal, FNZIV, FPINZ, AREINZ
Mark Parlane BBS ANZIV SPINZ
Michael Granberg BCOM, BPROP, MPINZ
Melaney Kuper B.ApplSc (RVM), DipUrbVal
Lianne Harrison BBS (VPM)
Douglas Shorten BBS (VPM), MPINZ
Anna Skelton BPROP
Jessica Nott BPROP
John W Charters FNZIV, FPINZ, AREINZ
Russell Clark BCOM (VPM) MPINZ
Anthony Long BPA, ANZIV, SPINZ
Andrew Jeffs BCOM BPROP
Rachel Smith BPROP, MPINZ
Melody Spaull BPROP
Amelia McKenzie BCOM, (VPM)
Darren Park BPROP

AUCKLAND

BAYLEYS PROPERTY SERVICES

CONSULTANTS, ANALYSTS, REGISTERED VALUERS & PROPERTY MANAGERS

Maritime Square,4 Viaduct Harbour Avenue, Auckland
PO Box 8320, Symonds Street, Auckland 1150
Phone (09) 375 6875 Facsimile (09) 358 3550
Website www.bayleys.co.nz Email firstname.surname@bayleys.co.nz

General Manager – Commercial
Nicholas Piper B MKTG, POSTGRAD DIP PROP DEV & MGMT

Bayleys Property Services Ltd
Andrea Wong, BPROP, MPLANPRAC
Andrew Wilkie
Ken Hardley, BCOM
Lucy Oliver, MRICS
Natasha Gowan, NZCAD
Paul O'Malley, IQP REGISTERED
William Li, BPROP, BCOM
Zane Smith

Bayleys Research
Gerald A Rundle, B COM, BPA, ANZIV, SPINZ
Ian Little, BSC (HONS), MRICS
Sarah Davidson, BBS

Bayleys Valuations Ltd
Allen D Beagley, B AG SC, MNZIPIM, ANZIV, AREINZ, SPINZ
Chris Orchard, FPINZ FNZIV
John Freeman, FPINZ, MRICS, MACostE
Melissa Carter, BPROP, MPINZ
Paul Butchers, FPINZ, MRICS, MACostE
Steve McColl, BBS (VPM)

SOUTH AUCKLAND

PROPERTY VALUATIONS LTD

PROPERTY CONSULTANTS & REGISTERED VALUERS

PO Box 72 452, Papakura 2244
Papakura – Phone (09) 299 7406 **Pukekohe** – Phone (09) 239 0906
Email: pvloffice@xtra.co.nz Web: www.propertyvaluationsltd.co.nz

Peter Hardy, DIP URB VAL, ANZIV, SPINZ **Peter Bennett**, DIP VPM, ANZIV
Russell Martin, B AGR, ANZIV

TAURANGA

PROPERTY SOLUTIONS (BOP) LIMITED

REGISTERED VALUERS, MANAGERS, PROPERTY ADVISORS

TAURANGA Phone (07) 578 3749
MOUNT MAUNGANUI Phone (07) 572 3950
ROTORUA Phone (07) 343 9261

Email: info@4propertysolutions.co.nz **www.4propertysolutions**

Simon Harris, B AG COM, ANZIV, FPINZ
Harley Balsom, BBS (VPM), ANZIV, SPINZ
Steve Newton, BBS (VPM), SPINZ
Garth Laing, BCOM (VPM), ANZIV, SPINZ
Mark Grinlinton, BCOM (VFM) SPINZ
Todd Davidson, BBS (VPM), SPINZ

NEW ZEALAND PROFESSIONAL CARDS

THAMES/COROMANDEL

TOWNSHEND CULLEN ASSOCIATES
REGISTERED VALUERS & PROPERTY CONSULTANTS

Whangamata (07) 865 9298 **Paeroa** (07) 862 6625
Whitianga (07) 866 0387 Website: **www.valuerstca.co.nz**

John P Cullen SPINZ, ANZIV, AAPI, B COM AG (VFM) Geoffrey Porter BAGSCI, SPINZ, ANZIV
Shane Rasmusen BBSVPM, MPINZ, REGISTERED VALUER Alison Young DIPVAL, MPINZ

WAIKATO

FERGUSSON LOCKWOOD & ASSOC
REGISTERED VALUERS | PROPERTY & AGRIBUSINESS CONSULTANTS

Level 2,169 London Street, Hamilton. PO Box 9439, Hamilton.
Phone (07) 838 3248 - **Facsimile** (07) 838 3390 - **Email** hamilton@fla.co.nz
www.fla.co.nz – 0800 922 122

R Fergusson, SPINZ, ANZIV, MBA (Director) R J Lockwood, DIP AG, DIP VFM, ANZIV, SPINZ
T Williams, B.Com, AG.(AM), MPINZ L R Robertson, MZNIPIM, ANZIV, APINZ
J L Sweeney, DIP AG, DIP VFM, ANZIV, SPINZ A Fergusson, Property Valuer

BRIAN HAMILL & ASSOCIATES LTD
REGISTERED VALUERS, PROPERTY CONSULTANTS

1010 Victoria Street, Hamilton. PO Box 9020, Hamilton.
Phone (07) 838 3175 Facsimile (07) 838 3340
Email info@hamillvaluers.co.nz Website **www.hamillvaluers.co.nz**

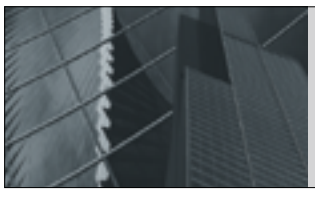
Brian F Hamill, VAL PROF, ANZIV, AREINZ, AAMINZ, SPINZ Kevin F O'Keefe, DIP AG, DIP VFM, ANZIV, SPINZ

ROTORUA/BAY OF PLENTY

REID & REYNOLDS LTD
Registered Valuers & Property Advisors

Grant Utteridge, FNZIV, FPINZ, B.Com (VPM) Martyn Craven, ANZIV, SPINZ, MA (Cantab)
Sharon Hall, ANZIV, SPINZ, B.Com (VPM) Kendall Russ, ANZIV, B.Com (VPM)
Mike James, MPINZ, BBS (VPM) Geoff Edmonds, MPINZ, BBS (Valuation)

1231 Haupapa Street, PO Box 2121, Rotorua 3042, New Zealand
P. +64 7 348 1059 F. +64 7 347 7769 info@reidandreynolds.co.nz
www.reidandreynolds.co.nz



HAWKES BAY

WILLIAMS HARVEY
HASTINGS | NAPIER | DANNEVIRKE
REGISTERED VALUERS

Paul Harvey BBS MPINZ ANZIV *(Director)*
Jim Harvey FNZIV FPINZ FREINZ
Bill Hawkins FNZIV FPINZ
Kirsty Miller BBS MPINZ ANZIV
Paul Bibby BCom (VPM) MPINZ
Grant Aplin BCom (VPM) MPINZ
Chris Hope BCom (VPM)

Postal 213 Queen Street West, P O Box 232, Hastings 4156 NZ
Hastings **T** 06 871 0074 **E** valuers@williamsharvey.co.nz
Napier **T** 06 835 1617 **E** napiervaluers@williamsharvey.co.nz
Dannevirke **T** 0800 482 583 **E** valuers@williamsharvey.co.nz

Web Site www.williamsharvey.co.nz **Facsimilie** 06 871 0084

WELLINGTON

CROMBIE LOCKWOOD
New Zealand's Insurance Brokers

Crombie Lockwood Building
Level 3, 15-21 Dixon Street, PO Box 496, Wellington 6140
PHONE: 04 802 0040
FAX: 04 802 0041
www.crombielockwood.co.nz

Alastair Bridge
ANZIF (Senior Associate), FCIBNZ, CPIB
DDI: 04 296 1010
MOBILE: 027 222 9446
EMAIL: alastair.bridge@crombielockwood.co.nz

Locally focused, nationally resourced, internationally endorsed.

the propertygroup
Corporate Property Advisors and Negotiators®

NATIONWIDE CORPORATE PROPERTY ADVISORS & NEGOTIATORS SPECIALISING IN PUBLIC LAND & INFRASTRUCTURAL ASSETS **14 OFFICES NATIONWIDE**

Level 10, Technology One House, 86-96 Victoria Street, PO Box 2874, Wellington.
Managing Director: Greg Ball Phone (04) 470 6105 Facsimile (04) 470 6101
Email enquiries@propertygroup.co.nz Website **www.propertygroup.co.nz**

www.api.org.au

The 2011 revised Australian Property Institute website

Launched in April 2011 and offering members a more dynamic site including information from every aspect of the property profession, divisional news, specialist areas, practitioner search, extensive library, education, classifieds and news feed.

It is estimated that impressions delivered to visiting property professionals to the site will be around 400,000 a month.

The website is an extremely valuable store of information including:

- Up to date & archived eNews to reference.
- Events calendars to keep you in touch with API events.
- Access to important documents such as the ANZ Valuation Property Standards.
- Links to the API shop & bookstore with many professional standards and reference materials.
- Young Property Professionals (YPP) section which often helps provide excellent opportunities to network with young professionals from in and outside the property industry.
- APIV The Australian Property Institute Valuers information, a scheme designed cap the occupational liability of participating APIV Members.
- Future Property Professionals (FPP) a series of on-line modules designed to provide specific education and training on areas that are of high importance to property professionals.

For more information go to: www.api.org.au

api.org.au