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Forecasting the Skill Requirements of the Bricklaying Industry in Victoria for 2001-2004

A joint project by

Holmesglen Institute of TAFE

and the

Tasmanian Building and Construction Industry Training Board

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Content

1 Context

1.1 The Australian Market

The Australian economy grew by 4.3 percent in 1999-2000, above the long term trend rate of 3.5 percent. Since November 2000 however, there have been signs of a slowing in the Australian economy.

A recent national survey of 2000 business firms by the Australian Chamber of Commerce and Industry suggested a drop in activity is looming for many enterprises. Although sentiment about the economy is calm (investment remains steady), expectations about profits and employment are gloomy.

Other surveys eg Dun and Bradstreet, Morgan and Banks, National Australia Bank and Westpac-Melbourne Institute show dropping expectations for profits and employment. Concerns include the weak Australian dollar, high fuel prices, interest rate uncertainty, and goods and services tax (GST) compliance.

Unemployment which has been the lowest in years is now starting to go up (6.8 as at February 2001 compared to 6.25 percent in November 2000). According to the Vacancy Report published by the Department of Employment, Workplace Relations and Small Business, construction trades vacancies continued to fall in April 2001 (down 8.1 percent in the month and 81 percent for the year since the peak in April 2000). Skilled vacancies for construction trades rose by 75 percent over the year to June 2000.

Inflation is now higher at 6 percent (February 2001) with the effect of the GST.

In December 2000, finance for the construction of new homes has dropped to its lowest level since 1987, and loans taken out to buy newly completed homes have plunged by 18.5 percent to a 10-and-a-half year low.

In February 2001, Australia's Reserve Bank cut the interest rate to 5.75 percent, the first downward move in official rates since December 1998. In a statement announcing that decision, the Reserve Bank said consumer inflation remains low, business confidence has declined over recent months, the labour market has softened, credit growth has eased and economic conditions globally have deteriorated since 2000.

In March 2001, the Reserve Bank further cut the interest rate to 5.25 percent to those continuing economic trends. It highlighted the extraordinary downturn in the housing industry. A further interest rate cut of 0.25 percent was made in April 2001. The Reserve Bank has left the interest rate unchanged at 5 percent in May 2001.

Shortly after, the Federal Government extended the first home buyers' GST compensation package. The Government has increased the grant available under the First Home Owners Scheme from $7,000 to $14,000 for those home buyers who sign a contract to build a new home or to buy a previously unoccupied new home on or

after 9 March 2001. It has been proposed that the grant will revert back to $7,000 for new home contracts entered into after 31 December 2001. The grant will remain at $7,000 for first home buyers who purchase existing homes. State and territory governments have been asked to consider waiving at least part of he stamp duty they levy in respect of all new house purchases.

The construction industry has been optimistically watching for the flow-on effects of both the interest rate drop and the first home owners grant. The industry is expecting continued weak activity at least until August 2001. In the meantime, commercial and infrastructure services are levelling out due to weaker non-residential and engineering construction activity.

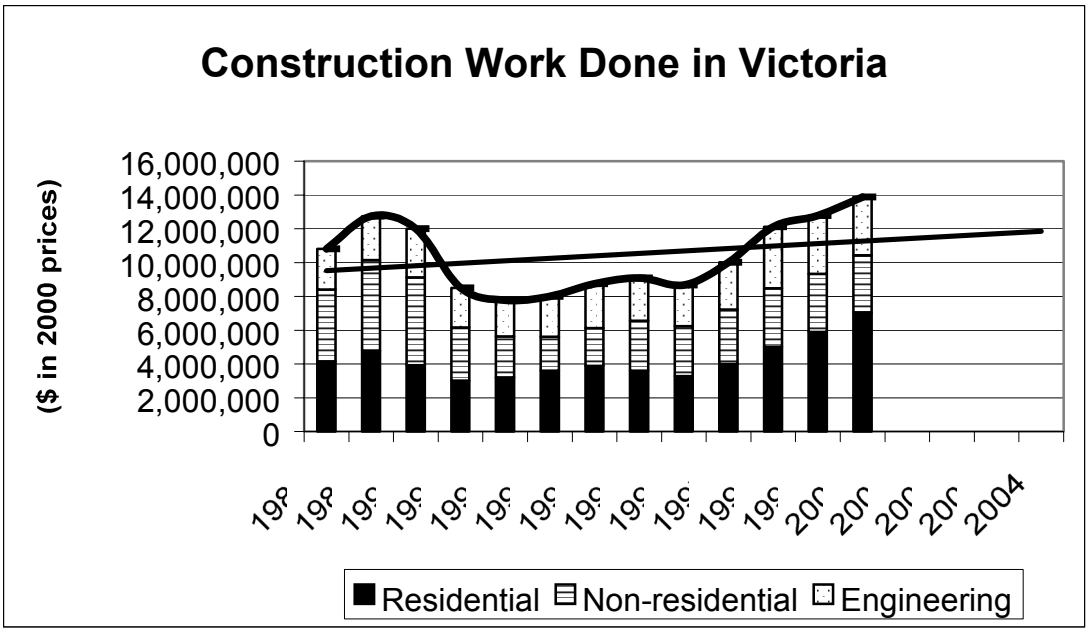
1.2 The Victorian Market

Among the states, Victoria had one of the fastest growing demand for construction services in the last five years to 2000 (up to 20 percent in 1997-98). Construction activity has now eased.

Construction activity reached $13.9 billion in 2000, up by 8.6 percent from 1999. A huge pre-GST spending spree drove residential building work up by 19.3 percent to $7 billion. Non-residential building work remained steady at $3.4 billion. Engineering construction work also stayed at the same level of about $3.5 billion.

Based on the amount of building work for the seven months to January 2001, value of work done for 2000-2001 will be about $9 billion ie $13.5 percent or 1.4 billion less than in the previous year. From January 2000 and January 2001, the number of total dwelling units approved in Victoria dropped by 38 percent (35 percent decrease for Australia).

With its economy growing at an average 2.9 percent since 1990 and the population growing by 1.2 percent or over 57,000 people each year, Victoria will likely see building activity levels in that state recover by mid-2002.



1.3 Construction Industry Training in Victoria

As in other states and territories, the construction industry in Victoria consists mainly of small subcontractors. As at June 1997, there were 46,000 operating businesses in the construction industry in Victoria. Those businesses employed 114,000 industry members or about three people each (Private Sector Construction Industry, Australia, Australian Bureau of Statistics Cat No 8772.0). This industry structure presents challenges relating training including content, access and delivery.

The construction industry continues to have a commitment to apprenticeships as the preferred means of skill development. Apprenticeships have an image which reflects a four-year commitment, relatively low training wages and occasional fickle treatment of an apprentice. Recent developments have included a move toward a competency based system, multiskilling, group training schemes and pre-employment training. The present structure of the industry (many small companies and uncertain continuity of work) however, has made business commitment to a traditional four-year apprenticeship more challenging.

In the past, members of the construction industry have commented that the supply and quality of apprentices have been limited by poor image and lack of promotion of bricklaying (and construction occupations) as a career choice for young talented people. The emphasis has been placed on higher education and the professions. Various industry organisations including the industry's national training advisory body Construction Training Australia have been trying to deal with that issue.

In that regard, the Clay Brick and Paver Association of Victoria has achieved considerable success over the last three years with such initiatives as:

- Appointment of an industry placement officer in 1998 to promote bricklaying as a worthwhile occupation and a promising career option.

- Production of a high standard information package consisting of the brochure *Bricklaying & Blocklaying* and the poster *Career Pathways for Bricklayers* in 1999. To date, some 15,000 brochures have been distributed to all TAFE colleges, 300 secondary schools, Job Network and Centrelink agencies, and 100 Community Based Employment offices in Victoria. Copies of the poster have also been widely distributed. The feedback from those organisations has been very positive.

- Extensive radio and print advertising campaigns in 1998 and 1999.

- Establishment of the web site www.brick-layers.org promoting bricklaying. It contains links to other employment and educational sites.

- As part of the marketing effort in regional Victoria, bricklaying "taster" programs for secondary school students have also been sponsored by the Clay Brick and Paver Association of Victoria. Conducted for 40 hours over 10 weeks in conjunction with the local TAFE college, those programs aim to give some hands on bricklaying experience to enthusiastic Year 9 and Year 10 students, to raise the general profile of the trade and to support the pre-apprenticeship programs in the region. Because the programs proved very successful in 2000, all schools and TAFE colleges involved requested that more programs be offered in 2001.

To better cater for industry needs, a new Bricklaying Training Centre is being planned for Holmesglen Institue of TAFE. That Centre is important as current resources are not sufficient to cope with the dramatic increase in the number of first year bricklaying apprentices in 1999 and 2000.

Table 1. Number of First Year Bricklaying Apprentices at Selected Training Providers in Victoria

Year	Holmesglen Institute of TAFE	University of Ballarat	Bendigo Regional Institute of TAFE	Gordon Institute of TAFE, Geelong	Northern Melbourne Institute of TAFE	Victoria University of Technology
1997	42					
1998	65	5*	7*	12*	24	
1999	88	25	14	50	48	
2000	105	32	18	39	37	35

** Approximate*
Source: Clay Brick and Paver Association of Victoria

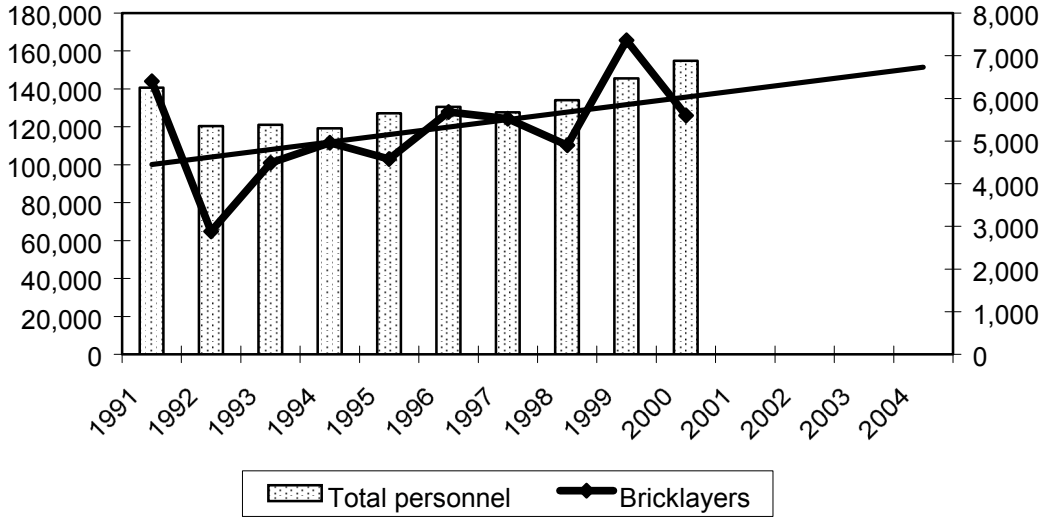
1.4 Bricklaying in Victoria

Bricklaying covers laying bricks, pre-cut stone, concrete blocks and other types of building blocks in mortar to construct and repair veneer and solid walls, foundations, partitions, arches and other structures. Entry to this occupation is generally through vocational education and training. According to estimates by the Department of Employment, Workplace Relations and Small Business, only 45 percent of bricklayers in Australia have bricklaying trade qualifications, 40 percent have no qualifications and 15 percent have qualifications other than bricklaying.

According to Australian Bureau of Statistics data, an estimated 26,000 bricklayers presently work in Australia. About quarter of them operate in Victoria.

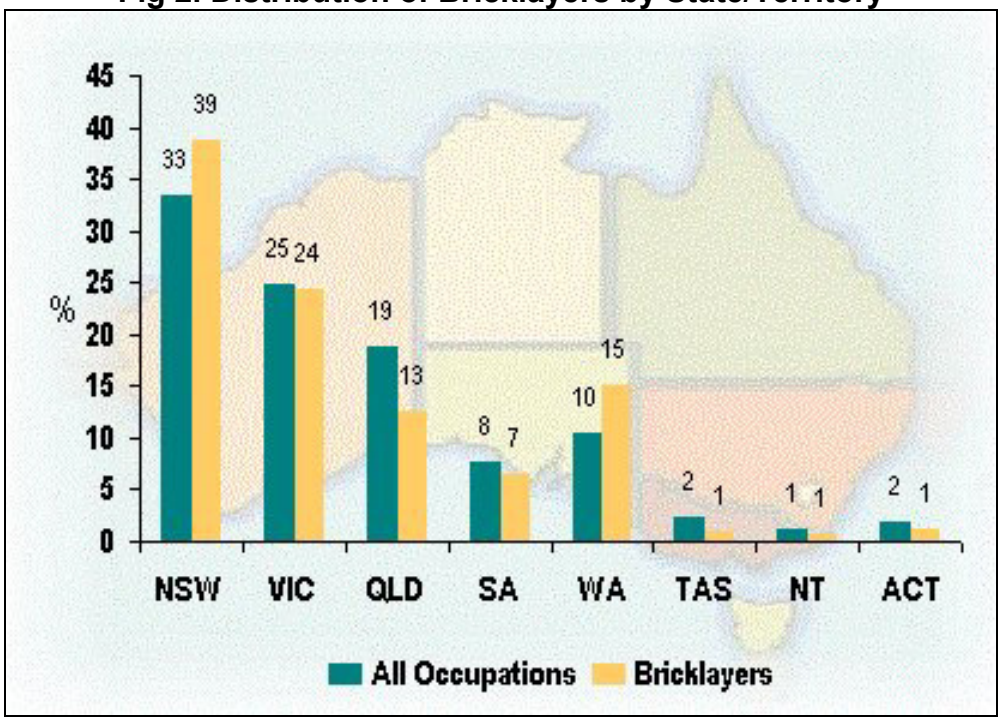
Based on trends in activity levels and employment, at least 6,000 bricklayers will be needed in Victoria in the next three years.

Fig 1. Employment in Construction, Victoria



Source: Australian Bureau of Statistics

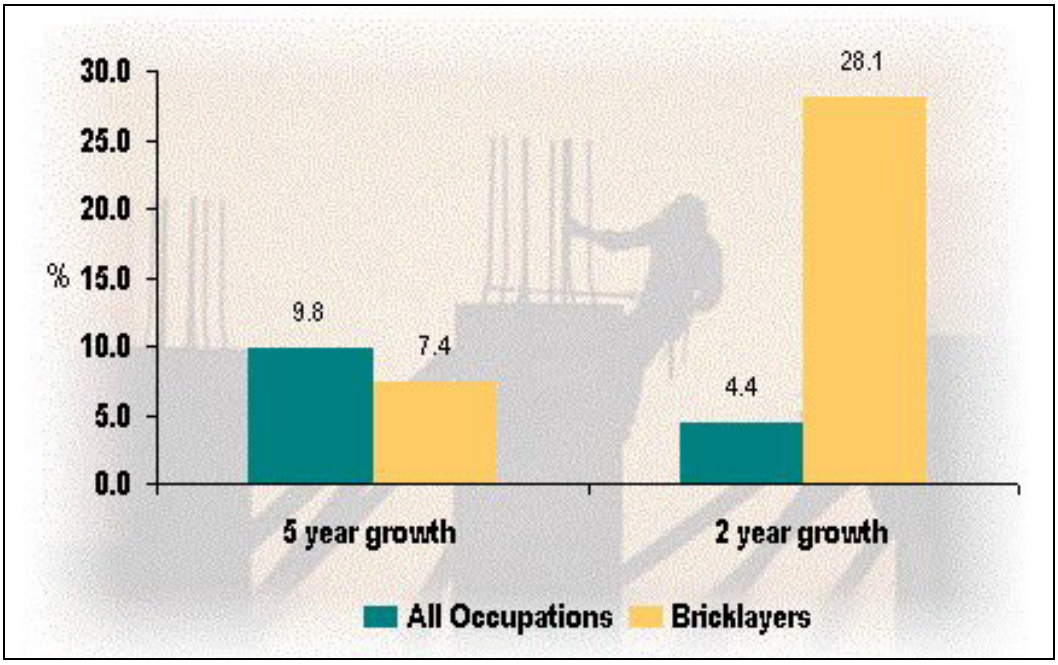
Fig 2. Distribution of Bricklayers by State/Territory



Source: Commonwealth Department of Employment, Workplace Relations and Small Business

Nationally, employment of bricklayers rose over the last five years. That trend is reflected in Victoria.

Fig 2. Growth in the Number of Bricklayers in Australia over the Last Five and Last Two Years to 2000



Source: Commonwealth Department of Employment, Workplace Relations and Small Business

2 Is There a Skills Gap?

Sustained activity levels in both the residential and non-residential sectors in a number of states from 1997 to mid-2000 contributed to the broadening skill shortages in the construction trades. During that period, total building activity levels in Australia increased by an average 7 percent a year while the total number of building apprentices in training grew only by 2 percent a year to reach 26,222 in 2000 (Construction Training Australia). A short supply of bricklayers had been reported in New South Wales, South Australia, Tasmania, Victoria and the Northern Territory.

In Victoria, opportunities for bricklayers have grown strongly since October 1996 to reach the highest levels in the ten years to 2000. During that period, building activity increased by an average 10.9 percent each year in real terms, amounting to $10.4 billion in 1999-2000. Apprenticeship completions, however, have fallen from 78 in 1997 to 54 in 1999 (Construction Training Australia).

The trend toward subcontracting (combined with the cyclical nature of activity and employment in the construction industry) has made it more difficult for smaller businesses to profitably employ apprentices. During 1997-2000, employers in the construction industry particularly New South Wales and Victoria reported difficulty in filling vacant positions (Department of Employment, Workplace Relations and Small Business) and have expressed concern about the potential problems such a skill shortage can create including:

- Not completing projects on time.
- Losing the skills base and the capacity to develop sufficient capability to handle an upturn in activity levels.
- Hampering growth in related industries like tourism.

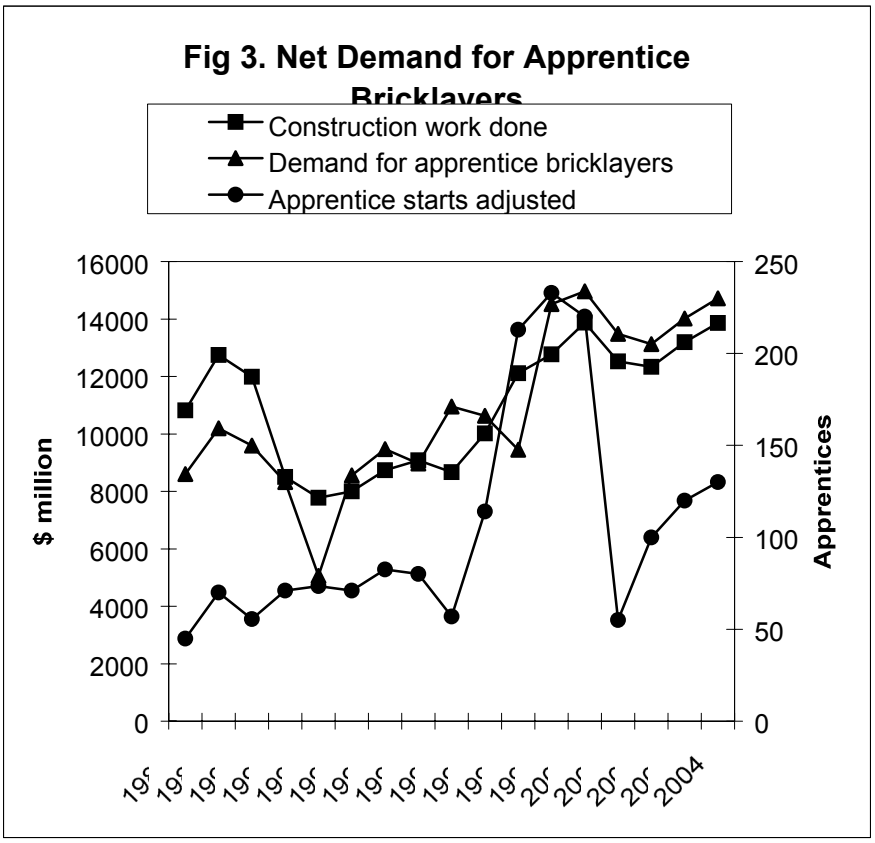
Occupational displacement (qualified workers who no longer are employed in the occupation for which they are qualified) and displacement during training (apprentices not completing their apprenticeship) also contributed to short supply of bricklayers.

The 1996 census revealed that a considerable proportion of qualified tradespersons leave employment, as high as 35 percent. Around two-thirds (65 percent) of tradespersons who left their trade did so within the first ten years of employment in their trade. The main reasons for leaving their trade were:

- Lack of work or laid off.
- Wanted a change or dissatisfied with the job.
- Family or personal health.
- Lack of career prospects, sought better pay.
- Need for more job security and better physical working conditions.

Structural change and strong employment growth in alternative, more rewarding careers have drawn away people from bricklaying. Like other construction industry workers, bricklayers tend to leave their trade as they reach middle age, to seek less physically demanding work.

Although building activity is expected to slow down within the next 18 months, patches of skill shortages in the Victorian bricklaying industry in the last two years warn that measures should be taken to balance the supply of skilled bricklayers with construction activity requirements strategically, say over the next five to seven years.



Source: Bricklaying Skills Forecasting Model prepared by the TBCITB for Holmesglen Institute of TAFE

3 A Forecasting Model

Capturing the relationships between the value of construction work available and number of bricklayers in the industry would provide a means of organising the relevant statistics and an additional basis for decisions on training. The model (see Appendix) used in this project makes the most of data available and can perform the following operations:

- Estimate construction work available based on trends in residential, non-residential and engineering sectors.

- Calculate a suitable number at which training of apprentice bricklayers should be targeted. That calculation considers the employment make-up of the construction industry, attrition rate and proportion of qualified bricklayers.

- Give guidance on the extent of the surplus or shortfall of apprentices in training, in particular, on how many should be commencing training each year.

- Describe the effect of varying levels of residential construction work, non-residential construction work, productivity, attrition, apprenticeship starts and cancellations on the training system.

The following input data in time series for Victoria were used in the model:

- Residential building work done
- Non-residential building work done
- Engineering building work done
- Employment in the construction industry by occupation
- Number of bricklaying apprentices in training
- Number of apprenticeship commencements
- Number of apprenticeship cancellations
- Number of apprenticeship completions
- Supplementary information such as productivity, age profile and number of years in the trade

The four operating principles behind the model are:

1. The level of construction activity significantly influences the levels of employment and training in the industry.

2. Total employment may be broken down by occupation based on the occupational make up of the construction industry according to census and survey data.

3. The net demand for bricklayers (in terms of apprenticeship commencements) can be estimated based on the number of bricklayers in the industry, attrition rates taking into account the age profile and average working years, and the proportion of bricklayers holding bricklaying qualifications.

4. The surplus or shortfall in apprentice numbers (commencements) may be obtained by comparing the estimated demand with actual first year enrollments.

Because those principles equally apply to other industries and occupations, the model can be adopted to forecast the skill requirement of specific groups. The Tasmanian Building and Construction Industry Training Board, for example, uses a similar model to forecast activity levels by sector, employment by occupation and apprentice numbers by occupation for the whole building and construction industry in that state.

The following five assumptions in the model have been guided by several statistics for the bricklaying industry nationally. Their relevance to the industry in Victoria has been verified with industry practitioners and data for that state will be used when they come to hand.

1. Productivity expressed as the value of construction work done per construction worker has improved significantly ranging from $58,000 per person in 1988 to $90,000 per person in 1998 ($89,584 per person in 2000). That trend can also mean profit margins have grown considerably during the last decade. Estimates of productivity for each occupation in the industry are lacking, those figures and trends have been assumed to generally reflect productivity in bricklaying. Research on that topic would be helpful.

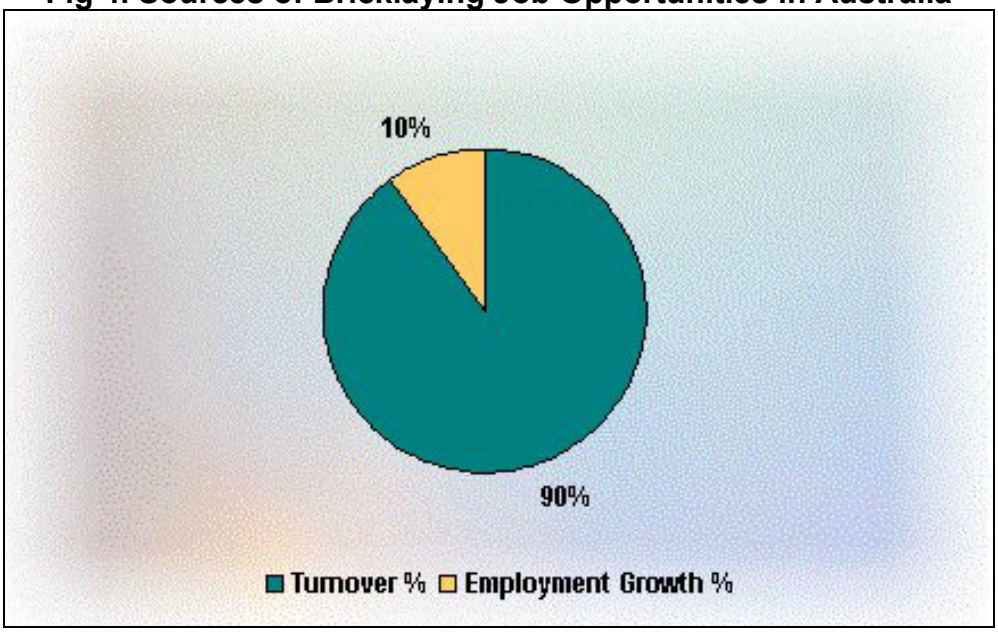
2. Most of the bricklaying job opportunities for the next five years will result from job turnover.

   Bricklaying job opportunities come from two main sources: actual expansion of the number employed in an occupation (employment growth) and workers leaving the occupation (job turnover), thus creating a vacancy that can be filled by somebody else. Those who move between jobs but do not leave the occupation are not included in the job turnover figures.

   Employment growth is where the number of jobs available increases because of increased demand for that type of job. For example, if the number of new houses being built increases, the demand for bricklayers will likely increase. Thus more bricklayers will be required.

   It is noted that job turnover provides most job opportunities and does not primarily depend on the level of demand for the occupation. People move in or out of the occupation for a variety of reasons and the occupation may be one which is an entry point to a different but related occupation, or a stepping stone in a career. For example, construction labouring jobs have a high job turnover.

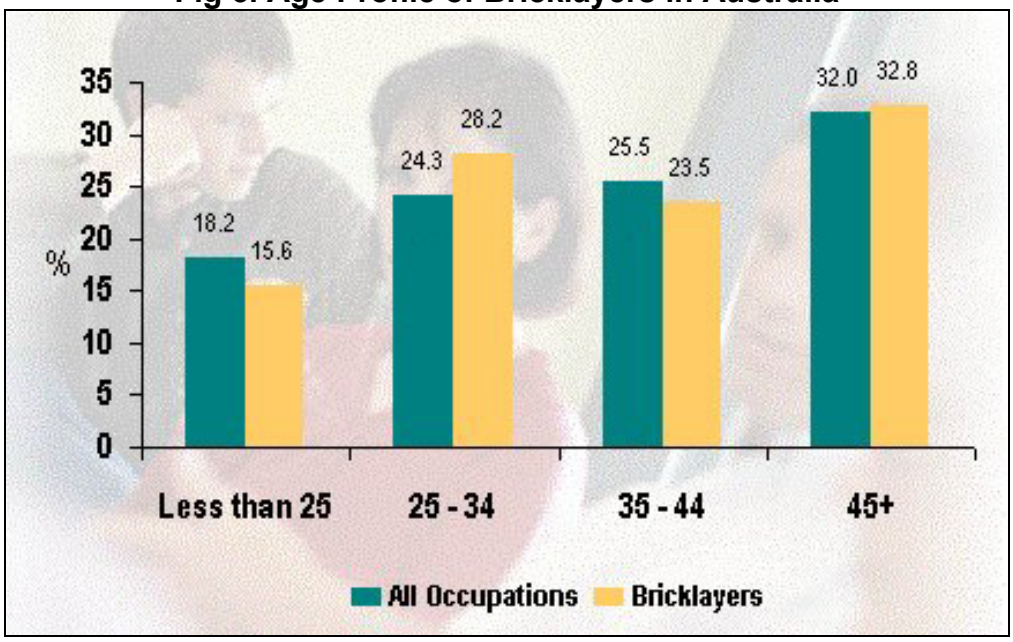
Fig 4. Sources of Bricklaying Job Opportunities in Australia



Source: Commonwealth Department of Employment, Workplace Relations and Small Business

3. A third of bricklayers are over 45 years old. When building activity levels pick up as may be expected from mid-2002, more suitably qualified bricklayers will be required by the industry. The level of training now should anticipate that activity cycle.

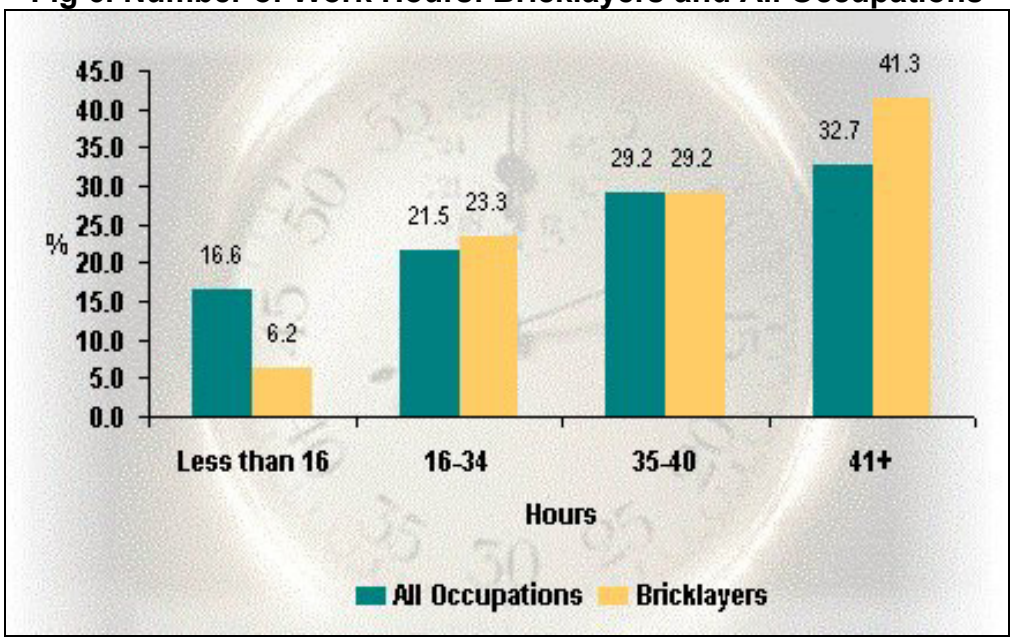
Fig 5. Age Profile of Bricklayers in Australia



Source: Commonwealth Department of Employment, Workplace Relations and Small Business

4. Labour Force Surveys conducted by the Australian Bureau of Statistics (ABS) show that 70 to 75 percent of bricklayers work more than 35 hours per week. Those figures support the high level of activity between 1997 and 2000 and the high demand for bricklaying skills during that period.

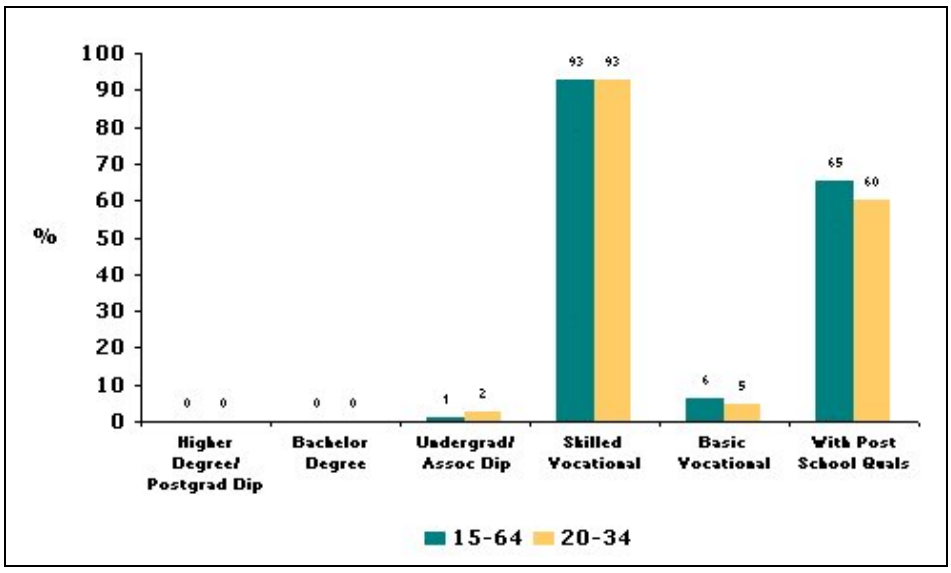
Fig 6. Number of Work Hours: Bricklayers and All Occupations



Source: Commonwealth Department of Employment, Workplace Relations and Small Business

5. Only about half of bricklayers have bricklaying qualifications according to the 1996 ABS Census of Population and Housing. Almost all of those are between the age of 15 and 34 (see Fig 5 and 7).

Fig 7. Educational Profile of Bricklayers in Australia



Source: Commonwealth Department of Employment, Workplace Relations and Small Business

4 Emerging Skill Requirements

Until just recently, it appears that the number of apprentices commencing training each year in Victoria has been below reasonable estimates of demand. Although apprentice starts (after adjusting for recommencements, cancellations and withdrawals) have been increasing, high levels of activity as in 1989 and in 1996 showed the shortfalls that could have been strategically damaging for the industry.

The current level of intakes (around 300 apprentices a year – Construction Training Australia) appears to correspond to the minimum needed to keep the bricklaying industry and its capability stable in the years ahead.

Table 2. Number of Bricklaying Apprentices in Victoria

Year	Commencements	In Training	Completions
1995	134	326	63
1999	354	609	54

Source: Construction Training Australia

Several considerations that could point to whether or not that level of intakes should be adjusted include:

1. The trend estimate for total dwelling units approved has risen over the last six months to March 2001, after eight months of decline (Building Control Commission, Victoria).

2. There are national skill shortages of bricklayers. Interstate migration data are lacking and can only be qualified at present. Employment of bricklayers nationally increased by 27 percent between 1992 and 2000 ie 3.4 percent each year (Australian Bureau of Statistics). Some 26,000 bricklayers currently operate in the industry.

3. The level of construction activity should be monitored along with consumer preferences especially in the residential and non-residential sectors. An example is the use of tilt up slabs and pre-cast concrete.

4. The construction industry's employment structure could have an effect on the validity of the estimates. Data show consistently that bricklayers make up 4 to 5 percent of the construction work force.

5. More information on productivity and profit margins would help refine the estimates.

6. The attrition rate is assumed to be 6 percent. This is consistent with the age profile from the 1996 census and may not apply anymore. Indications from industry members on how long bricklayers stay in the trade in Victoria, say 15 years can be a useful benchmark to calibrate that rate. Those figures are similar to Construction Training Australia estimates and have been validated at least in Tasmania through industry workshops. Further research on this topic is required.

7. Slight improvements in apprenticeship cancellations and withdrawals for the coming years were used in the simulation. Initiatives to help maintain apprentices in training would keep the estimates reasonable.

8. Australian Bureau of Statistics data and anecdotal evidence suggest that about half of bricklayers operating in the industry in Victoria do not have qualifications. The level of consumer confidence in their services relative to the services provided by qualified bricklayers would affect apprentice intakes and training.

Table 3. Estimates of Shortfall or Surplus in Bricklaying Apprenticeship Commencements

Year	Construction work available ($ million in 2000 prices)	Minimum personnel required	Demand for apprentice bricklayers	Apprentice starts (adjusted)*	Net apprentice bricklayers required
1988	10824	186621	134	45	-89
1989	12748	212467	159	70	-89
1990	11994	199900	150	56	-94
1991	8497	139779	130	71	-59
1992	7777	119705	79	74	-6
1993	8005	120401	134	71	-63
1994	8740	118507	148	83	-65
1995	9083	129726	140	80	-60
1996	8672	131094	171	57	-114
1997	10012	128152	166	114	-52
1998	12108	134468	148	213	65
1999	12773	149392	227	233	6
2000	13877	171321	234	220	-14
2001	12525	144798	211	55	-156
2002	12335	140971	205	100	-105
2003	13195	147430	219	120	-99
2004	13860	154860	230	130	-100

** Apprentice starts (adjusted) = Apprentice starts + Re-starts – Cancellations and Withdrawals*
Source: Bricklaying Skills Forecasting Model prepared by the TBCITB for Holmesglen Institute of TAFE

5 Summary

The project assembled the economic, industry and training factors about which it is possible to derive a systematic view of the bricklaying industry in Victoria, to apply modelling and statistical methods to ensure that the projections are consistent, and to identify the implications of the results.

Employment growth for bricklayers is expected to be slight between now and 2004. Employment rose moderately in the past five years to 2000 (and strongly in 1999 and 2000 reflecting strong growth in construction activity). A slowdown in construction growth is expected.

Training is increasingly being seen as a form of insurance against future structural and technological changes. Previous economic cycles proved that unskilled workers were at greater risk of missing out on employment when business conditions improve.

Gaps exist in the understanding of geographic spread of and reasons for skill supply and demand situations. A monitoring system and network for consolidating regular information on the supply of available qualified skilled persons and apprentices may be warranted. Such a network would also be useful in identifying business and training opportunities. In Tasmania for example, the Tasmanian Building and Construction Industry Training Board obtains all input data required for forecasting skill requirements from industry associations, government agencies, research organisations and training providers. The Board validates its information and forecasts through regional industry workshops and its membership.

Initiatives that have been implemented in the past include raising the profile of the trade, improving the quality, relevance and consistency of on-site and off-site training, and more incentives or subsidies for employers taking on apprentices. The excellent marketing effort by the Clay Brick and Paver Association of Victoria that was earlier described in this report should be maintained and further developed.

An important development that can affect the demand and supply equilibrium is whether or not the training system could be feasibly changed to enable apprentices to work more productively and give employers more reason to afford apprenticeships. That is likely to mean reducing the time it takes to qualify as a bricklayer, like by doing as many off-site training modules as possible at the start of their training.

The model should be revisited in view of new developments in both the industry and the training system. Changes in the relationships among the factors that drive the demand for and supply of bricklayers should likewise be taken into account.

6 References

ABS Australian National Accounts (cat no 5220.0)

ABS Building Activity Victoria (cat no 8752.2)

ABS Census of Population and Housing 1996.

ABS Engineering Construction Activity Australia (cat no 8762.0)

ABS Labour Force Australia (cat. no. 6203.0)

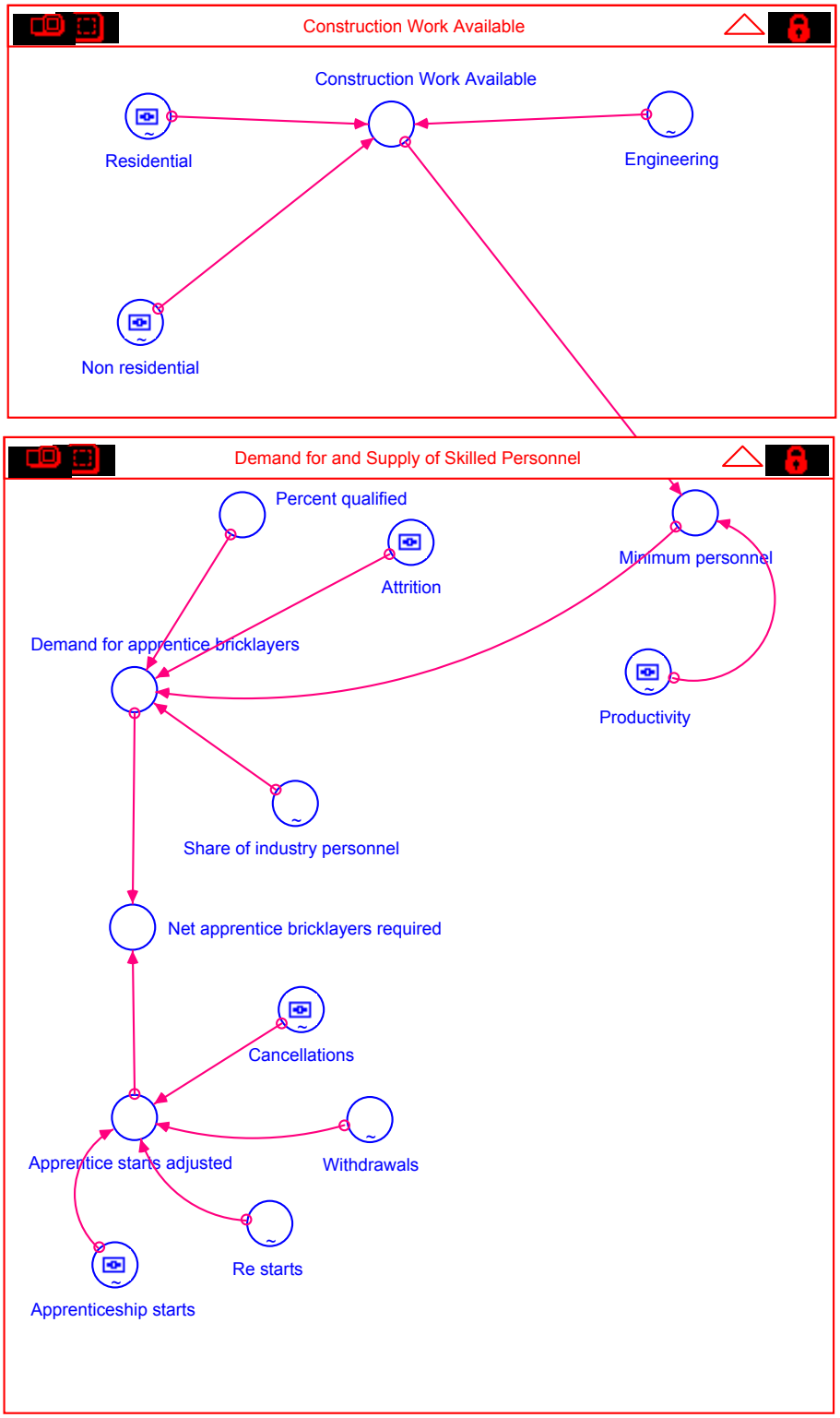
Building Activity Profile. Building Control Commission, Victoria.

Department of Employment, Workplace Relations and Small Business www.dewrsb.gov.au

National Centre for Vocational Education Research. Building Apprenticeship Statistics.

APPENDIX

The Model for Forecasting Skill Requirements of the Bricklaying Industry



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