

**Skills Formation in the  
Construction Industry—  
Lessons from some recent  
innovations**

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A SUMMARY OF RECENT SKILL FORMATION INITIATIVES IN THE  
CONSTRUCTION INDUSTRY

## ORIGINS AND STATUS OF THIS PAPER

In March 1996 a group of interested stakeholders in the NSW construction industry was convened by Michael Thompson to discuss problems facing the industry. It was agreed at this initial meeting that the group would meet in a non-representative capacity, that is, it would be neither an official industry or government policy body. The group is known as the Construction Industry Forum and participants come from large contractors, small contractors, government, legal firms, owners and the union movement. Its meetings are held on the 'neutral' ground of Sydney University's Australian Centre for Industrial Relations Research and Training (ACIRRT).

The group identified skill formation as a key problem facing the construction industry. All participants believe the industry is facing an impending shortage of quality skilled labour, especially at trades, pre-trades and semi-skilled level. Forum members also believe there is a shortage of leadership and co-ordination of skills formation in the industry. There is a belief that current training arrangements remain outdated and inefficient.

However, Forum members also reported that a number of highly successful, innovative approaches to skill formation in the industry have emerged in recent years. Knowledge of these initiatives is not widespread and co-ordination between them is poor. Some of these innovations have occurred as a by-product of the Australian Vocational Training System. Others have been industry driven, and others have been devised by enterprising private sector companies.

This paper has been prepared to assist in:

- (a) identifying the nature and extent of these initiatives and
- (b) identify ways to promote their adoption throughout the industry.

This paper does not purport to be a comprehensive catalogue of skill formation reform in the construction industry. It has been funded by a number of forum members: the NSW Department of Public Works and Services, Multiplex, Baulderstone Hornibrook, Barclay Mowlem and Koski Formwork. This has allowed ACIRRT researchers to prepare an 'overview' paper. As such the paper should be regarded a 'discussion starter' or 'thought provoker'. Any comments or suggestions concerning other initiatives that could be included in a subsequent version of this paper should be directed to: John Buchanan at

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## 1. INTRODUCTION

It is an exciting time to be involved in the NSW construction industry. Traditionally this industry has been highly fragmented and has experienced extreme swings of boom and recession. Skill shortages and rapid wage increases accompany upswings. Invariably these are followed by unemployment and low earnings during recessions. Currently a number of key industry players are exploring ways of changing these features of the sector. The NSW Department of Public Works and Services is introducing a number of new accreditation and tendering practices to improve business relationships and economic performance in the industry. The major construction contractors have reached a 'Memorandum of Understanding' (MOU) for the recognition of training provided by each enterprise. For their part the unions have, in recent years, reached industrial agreements concerning multi-skilling and skills development unimaginable only a decade ago.

Positive as these developments are, the real challenge lies ahead. Statements of policy and intent need to become practices in daily life if their potential is to be realised. This discussion paper has been prepared to help this next stage of the reform process. It begins with an overview of structural problems in the industry, especially its fragmentation. A number of recent 'industry' level initiatives directed at addressing these problems are then summarised. The report then devotes most attention to considering a number of successful initiatives devised to overcome skills shortages. These are practical examples of how improvements in training can be achieved 'on-the-job'. Consideration of these experiences then underlies some proposals on how innovations of this nature can be more widely diffused throughout the industry. The paper concludes with recommendations on how to progress these issues further.

## 2. THE CONTEXT OF TRAINING REFORM

There is general agreement that more should be done about education and skills formation. A major problem with many training reform proposals, however, is that training is effectively defined as a discrete, separate realm of activity. If training practices within an industry are actually to improve, the critical issue is to reform business structures and working practices to make skills formation integral to daily working life. This is not easily achieved. Effective reform proposals must, therefore, be devised in the light of a realistic understanding of how an industry is structured. Proposals devised without such insights are unlikely to engage with the key issues affecting the implementation of reform.

### (a) Industry Fragmentation

One of the major challenges confronting the reform of skill formation in this industry is its high degree of fragmentation. The nature of this fragmentation has been summarised in NSW Government's 1996 Green Paper on *The Construction Industry in NSW: Opportunities and Challenges*. Its consideration of this issue means it is only necessary to consider the two

major bases of fragmentation in the industry: industry sub-sectors and business organisation.

At the level of output there are profound differences between the activities undertaken in the housing, commercial building and engineering construction sectors. The skills and capital requirements for residential construction are quite different, for example, to those associated with building roads and bridges. These activities differ in their form from the erection of large scale offices and accommodation in the centres of major cities. The needs of different sub-sectors must be acknowledged if training reform is to succeed.

The fragmentation among business units, is of even greater significance. Most workers are employed by small subcontractors. The extent of this fragmentation is evident in Table 1. It summarises how employees are spread between businesses of different sizes in the NSW construction industry.

**Table 1**

**Employment by Enterprise Size in the Construction Industry, NSW, August 1992**

Enterprise Size (defined by employment)	Number employed	% of construction workforce
1-4	43,232	30.5
5-19	34,037	24.0
20-99	21,041	14.9
100-499	12,415	8.7
500+	31,080	21.9
Total	141,805	100

**Source:** Unpublished information from the Australian Bureau of Statistics Business Register as at August 1992. Note that 'enterprise' is formally described by the ABS as a 'management unit'.

Table 1 reveals that over half of the NSW construction workforce is employed in businesses with fewer than 20 workers and that nearly a third work in enterprises with fewer than 5 employees. Equally, it is important to note that over 20 % are employed in enterprises with 500 or more employees. When considering training initiatives, it important to remember that most employees work for either very small or very large organisations.

Not only are many organisations small, they are also highly technically specialised. Most are craft or trade based. This limits their capacity to provide opportunities for multi-skilling or firm-based career paths. The prevalence of this mode of business organisation creates profound challenges for those interested in promoting training reform in this industry. Fortunately, a number of new initiatives have been devised to address problems associated with these features of the industry.

**(b) Recent Industry Level Reform Initiatives**

The building industry has always been a source of major policy concern and interest. Problems with skill formation also received regular attention amongst specialist inquiries into the apprenticeship system. Throughout much of this century the apprenticeship system has undergone a number of reforms. Each round of initiatives has attempted to improve the number of skilled workers available for employment in the sector. In the long run, however, each initiative has met with only limited success.

Since the mid-1980s there have been a number of sustained efforts directed not simply at improving training arrangements, but rather at workplace and broader industry reform. Some of these reform initiatives have been directed at traditional industrial relations arrangements. For example, award restructuring aimed to make training integral to industry classification structures. It also resulted in the broadbanding of many tasks and reduced demarcations of jobs. It is now widely acknowledged, however, that many of the problems in the industry involve more than relations between employers, employees and unions. More recent initiatives have been directed at changing relations between businesses themselves.

An ambitious approach to reforming work and business practices within the industry is currently being promoted by the NSW Government. Its most recent initiative has been the release of a Green Paper entitled *The Construction Industry in NSW: Challenges and Opportunities* which outlines the Government's proposed vision for the industry. This document provides a clear analysis of problems confronting the industry associated with the anticipated boom in the lead up to next century. Its proposals cover industry development; training; building supplies; workplace reform and process improvement in the sector. The Green Paper provides a framework for some of the Government's more specific initiatives such as its recently revised 'Industry Code of Practice', and the Department of Public Works and Services 'Contractor Accreditation Scheme to Encourage Reform and Best Practice in the Construction Industry.' Both these initiatives are directed at linking the Department's power as a major user of construction services with proposals to improve the quality of work performed. Its Best Practice Accreditation Scheme, in particular, provides material incentives for sub-contractors to improve their business and work practices if they are to have access to tendering for certain types of government work. Its criteria for accrediting contractors as part of the best practice scheme concern:

- commitment to client satisfaction
- quality management
- occupational health, safety and rehabilitation management
- cooperative contracting
- workplace reform
- management of environmental issues
- partnering
- benchmarking

The Government's Green paper involves far more than promoting the Code of Practice and the Department of Public Works and Services Accreditation Scheme. Of most interest to training reform is its suggested 'Four-level

contract purchasing policy for training'. Under this, it is proposed that firms contracting with Government construction agencies as clients to the industry provide training plans as part of their tenders for work. The level of detail and resources expected varies. Contracts under \$500,000 would be expected to meet statutory requirements (eg OHS training) along with a basic plan outlining the firm's training commitments over the life of the project. For contracts valued above \$10,000,000 more would be expected, including in some cases the hosting of a training facility at or near the site.

The initiatives of the Government and its construction agencies have occurred at the same time as a 'Memorandum of Understanding' (MOU) has been reached amongst the major construction contractors. These contractors have collectively reached agreement that it is difficult to solve skill formation problems on an enterprise basis alone. Their agreement commits them to recognising and endorsing enterprise based training between signatory firms. To assist the implementation of this agreement a 'Major Construction Contractor's Skill Assessment System' has been produced. This system will help, among other things, with the development of consistent documentation and standardisation of training and accreditation practices amongst the firms. Members of the MOU group have also expressed an interest in promoting and/or adopting many of the initiatives being implemented by the Department of Public Works and Services.

Together these developments represent a major achievement in an industry which has traditionally been characterised by a high degree of fragmentation and ad hoc arrangements on issues such as skill formation. A major challenge in the current situation will be to ensure that the potential for change is realised on the job. Codes of practice, best practice accreditation schemes and skill assessment systems will count for little unless they affect the operation of the small businesses so prevalent in this industry. It is also important that those involved in the formal training system dovetail their offerings with these initiatives from leading employers. Examples of how practical changes of this nature have been achieved in recent years are summarised in the next section.

### **3. SOME RECENT INITIATIVES**

A brief summary of 30 different examples of skill formation innovation in the construction industry are summarised at Appendix 1.

One of our key findings is that most practical initiatives have come from one of three general sources:

1. Reforms to the vocational education system
2. Institutions that co-ordinate employers in the industry (eg skill centres and group training schemes)
3. Particular sites where management and/or unions develop site specific arrangements to improve the transmission of skill during the life of that project.

In addition we identified a number of initiatives that combined policy, multi-employer co-ordination and site based elements.

A guide to types of the innovations that have arisen from emerged from each of these sources is provided below.

### **(a) Vocational Education Reform Based Initiatives**

Since the mid-1980s there have been a number of far ranging reforms to Australia's system of vocational education. This has involved a fundamental restructuring of courses offered within secondary schools, the recasting of employment based training arrangements such as apprenticeships and new approaches to improving literacy levels amongst adults. Some examples of these different types of innovation follow.

#### **(i) School System Based Initiatives**

##### ***School to Work Entry Level Training Pilot, Western Australia (completed Dec 1995).***

This project was initiated by the Western Australian Building and Construction Industry Training Council, and funded by industry through the Building and Construction Industry Training Fund. It was an institution-based program in which students commenced vocational training whilst in their post-compulsory secondary schooling years.

The training was provided to students one day per week by the Plumbing and Painting Industry Skills and Technology Centre Inc. curriculum was designed to articulate to Australian Standards Framework (ASF) Level 1. It involved a theoretical component, but was also competency based. There were also some site visits, and some on-the-job training through students' participation in a community-based heritage restoration program.

The project was considered to be successful in achieving competency based building and construction industry training to ASF Level 1, and in raising awareness of the industry as a career option for post-compulsory secondary students. Some participants gained apprenticeships in the industry, some were able to identify that the industry was not for them and some returned to complete high school. The remaining 31% were seeking work in the industry.

A major benefit of this initiative was that it raised the confidence and self-esteem of participating students. One interviewee reported that many of the students were not the most academically inclined, yet they thrived on this approach to secondary schooling, impressing both employers and their parents with their interest and enthusiasm for the program. The major problem identified was timetabling difficulties when trying to fit one whole day at the skills centre into a rigid school timetable.

#### **(ii) Employment Based Initiatives**

Traditionally vocational education in Australia has been built around the apprenticeship system. Reforms to this system have been an important part

of the move to establish a new Australian Vocational Training System (AVTS), previously known as the Australian Vocational Certificate Training System (AVCTS). One of the major reforms to trades level work was piloted in the construction industry.

***AVC Certificate of Building and Construction (Fitout and Finish) (Trade Level) Pilot***

At the core of this pilot is training around a new vocation: building and construction worker. This is a multi-skilled occupation drawing on elements of the current building trades. The first training program developed for this occupation is in 'Fitout and Finish'. This covers basic skills previously spread across the trades of bricklayer, hard plasterer, tile layer, carpenter, fibrous plasterer and painter and decorator. There are three levels of skills:

- basic industry skills
- basic stream skills and
- field of work skills.

A major feature of the program is a new 16 weeks off-the-job training program which trainees undertake prior to entering the workplace. All curriculum is competency based allowing flexible entry and exit points, rather than time-based apprenticeship. The pilot has involved sites and educators in Victoria, Queensland and Western Australia.

There have been numerous evaluations of these and other AVCs. The general feeling was that AVC's offer similar standard/ content trades level training to that available under a competency based apprenticeship system, although the mode of delivery is different for AVC's. This pilot involved an initial 15 weeks on-the-job, then a 2 year contract with a builder procured by the Master Builders' Association (MBA), where the trainee would attend TAFE part time (usually on block release). Trainees were then guaranteed a job by the MBA. It should be noted that the Fitout and Finish stream of the industry covers a broader range of competencies than has traditionally been included in trades training for a component part of this stream of the industry. To this extent, AVC graduates are more multi-skilled than their apprenticed counterparts.

It was commented that this AVC format is technically illegal in NSW, as the relevant vocational education statute requires more onerous indentureship arrangements.

**(iii) Industry Training Council Based**

The reform of the vocational education system also involves raising general levels of literacy and numeracy among the employed workforce. A good example of this type of initiative comes from Western Australia.

***Literacy/OHS training in Western Australia***

The Western Australian Building and Construction Industry Council has initiated and participated in a literacy enhancement project to improve the literacy and numeracy competencies of building and construction workers. The project uses computer-based resources to teach these competencies, and

does so through delivery of relevant occupational health and safety (OHS) curriculum. This method has the advantage of integrating technical and literacy skills, and allowing trainees to respond to computers rather than books. The training is self-paced. One of the reported benefits of this initiative is that it reduces the potential stigma of 'literacy' training by making OHS the key subject matter of the learning materials. The use of notebook computers has also helped workers in some instances by allowing workers to learn both on-and off-site.

## **(b) Multi-employer based initiatives**

Some of the most innovative examples of training found in the industry involve institutions that facilitate multi-employer co-ordination in skill formation. At trades level, group apprenticeships have a long history. Two current examples are outlined below. At non-trades level, skill centres have operated for a number of years.

### **(i) Group Apprenticeship Schemes (Trade Level)**

#### ***Plumbing, Electrical, Electronics, Refrigeration Group Training Scheme, SA***

This is an industry specific, non-profit, group training scheme. Apprentices do an off-the-job component at TAFE, and the on-the-job component at various sites as coordinated by the group trainer. The off-the-job component does not differ from what a standard building industry apprentice would undertake.

As for the on-the-job component, this is innovative as each apprentice has an individual training program. The group trainer tries to match the apprentice's level and range of skills with that on offer by various employers. Thus, a first year electrical apprentice will work with an employer who does basic house wiring. By the time s/he is in 4th year, the apprentice will be located with a larger contractor doing more highly skilled trades level work. This scheme is advantageous in that apprentices are multi-skilled, and employers get a trainee more suited to the type of work they perform. This characteristic of the scheme requires a dedicated staff member spending considerable periods of time matching apprentices with appropriate employers.

#### ***Building Industry Group Training Scheme (BIGS), Victoria***

This group apprenticeship scheme was originally run by the MBA but is now run by the 'the industry'. It has a tripartite management committee with equal representation from employers, unions and government. In the 1990s, it had approximately 400 employees. Much of the training provided by the scheme is integrated with key aspects of the Building and Construction AVC Pilot.

A key feature of BIGS is a training philosophy that emphasises the need for apprentices to be productive and cost effective to employers from the moment they are employed. BIGS has sought to achieve this by ensuring that apprentices have relevant off-the-job training prior to commencing paid employment on-the-job. An example is provided in BIG'S approach to the

bricklaying/wet skills part of the fitout and finish training program. BIGS explains to the trainees that it is just not acceptable to be able to lay 100 bricks a day (an assumption of many apprentices). Instead, they ask trainees to think about the wages paid by employers to them. BIGS's charge out rate to employers is \$59 per day for a first year apprentice. A bricklayer is generally paid 40c per brick. Apprentices need to lay 150 bricks a day to cover the charge out rate. BIGS then explains that apprentices need to lay more than 150 bricks a day to make themselves attractive to employers. When an AVC trainee first leaves BIGS, they can usually lay between 200 and 240 bricks per day. It is this trait that employers find very attractive.

## **(ii) Skills Centre**

Training that co-ordinates employers, in an effort to assist in skill formation, also occurs for workers at plant and operator level. This most commonly occurs through skill centres.

### ***Industrial Skills Centre, Penrith***

This Centre had a number of distinctive practices relevant to improving training for people operating below trades level. A major aim of its training practices is the improvement of employers' delivery of on-the-job training, and the improvement of the quality and quantity of training provided.

The education provided has an off-the-job component conducted by instructors (who are usually retrenched older workers from the industry in which they train). They each receive 32 weeks of training in adult education. No instructor is allowed to teach on their own until they have had hundreds of hours of teaching 'prac's'.

Typical courses provided by this organisation involve the initial training of course participants at the Industrial Skills and Training Provider's Skill Centre. This is then followed by systematic/ structured on-the-job training provided by employers in the local district. All employers are regularly inspected to ensure that they are actually teach students new skills and are not merely using trainees as cheap labour. Employers are paid for such training and this gives them an incentive to provide it and ensure it is of a high quality.

In the early 1990s the Centre was establishing a network of on-the-job training places with employers in the local estate in which it was located. Employers were reportedly positive about the opportunity to 'sell' on-the-job training in periods when demand was slack. This initiative also reportedly helped local employers realise that they had skills which could and should be passed on, often for material gain.

In short, these training providers laid the basis for a more systematic approach to on the job training, by coordinating employers to assist in skill formation. Such an approach to skill formation could ensure that a more systematic infrastructure of on-the-job training is established in the future. Unfortunately, at the time of finalising this report, the Centre was in receivership. It appears that this was due to cuts in government funding.

### **(c) Site-based Innovations**

In the course of this research, a number of quite innovative approaches to training were identified. These had been built into large construction projects from their inception. These initiatives appear to have arisen from the vision of a forward thinking project manager and/or as a result of collective bargaining with unions prior to such projects commencing.

#### ***Glebe Island Bridge and Third Runway (Baulderstone Hornibrook) (Pre-Trades Level)***

At these two sites, off-the-job training was provided in semi-skilled areas in sheds physically located on-site. The Glebe Bridge project involved TAFE coming on-site and delivering courses that were specifically tailored for the project, but would still be accredited by TAFE. The training was made possible by combined effort of the company, the CFMEU and TAFE.

The Parallel Runways Project also offered on-site training, and delivered it during wet time. Training was delivered not only in technical skills, but in communications, performance assessment and the direction of the total project.

Both projects have been reported as successful training initiatives. It is important to note that the large scale of the sites appeared to have been a prerequisite for this type of training innovation, and its applicability to smaller sites should be questioned. Significantly the company used the same project manager for both sites, so lessons learnt from the Glebe site could be applied more effectively to the Parallel Runways site.

#### ***MCG Southern Stand, Melbourne (Trades Level)***

This site offered trades level training that involved TAFE staff going on-site to deliver customised training to apprentices. Recognition of Prior Learning (RPL) was also offered for those employees who had trades level skills, but had no formal recognition of these skills. All TAFE teachers involved underwent an extensive training program before teaching on the site. The training initiative was a collaborative venture, and was specified and agreed upon from the outset in an enterprise agreement.

#### ***Darling Park Project, Civil and Civic, Sydney***

This is a large construction site in Sydney that involved the full range of building and construction occupations. About 50% of labour on the site is Civil and Civic's direct workforce, and the other 50% are sub-contractors. A joint development agreement was struck between the CFMEU and the company, and underpinned the skills development project at the site.

Sub-contractors were required to carry out a skills audit of all employees on the site, and to develop an individual training program for each of them for the duration of the project. Civil and Civic's employees were allocated self-directed work teams. A skills audit was done to ascertain what skills they had and what they needed to develop.

The site has a training annex, and part-time employees were responsible for developing training modules and conducting training activities. TAFE has not been involved in any of the training. Training is primarily provided for the purposes of multi-skilling trades level employees. Whilst some employees took the opportunity to increase their skills, it was reported that some sub-contractors, forepersons and more experienced workers needed incentives to participate. Informal on-the-job learning was also facilitated by a mentoring process, whereby less experienced employees were rotated through more experienced trades level “mentors”. While this process was not formalised, it was considered to be quite successful.

#### **(d) Initiatives Combining Policy, Multi-Employer and Site-based Elements**

Some of the most interesting cases of innovation involved a combination of site level initiatives, vocational education reform, and improved approaches to multi-employer co-ordination.

##### ***Liverpool Hospital Redevelopment Project, Barclay Mowlem, NSW***

This site appears to provide an excellent example of how a building site can become an important site for education and training within a local labour market.

In 1995, it provided 57 work placements of 80 hours each for secondary students involved in Construction Industry Studies, an accredited course in the senior years of the NSW secondary school system. In 1996, 207 students were involved in such placements. The head contractor reported that the sub-contractors on site were very supportive of the initiative, arguing that they wished opportunities like this had been available when they had been at school. This initiative received some funding support from the Australian Student Traineeship Foundation (ASTF).

In addition, this site provided training opportunities for 198 long term unemployed people. Before these people were recruited, the head contractor met with the sub-contractors on site. Agreement was reached with the sub-contractors as to how many such people they could employ and what training they would need before they started. During these consultations it was made clear that the prime concern about the costs of training was not trainee/apprenticeship pay. Rather, the key issue was the cost of supervision: ie the time skilled trades people lost when they took time to provide on-the-job training in basic skills. As a result, the head contractor arranged for the new recruits to receive 6-8 weeks of basic training before they were sent out to work. This training ensured the trainees were 'productive from day 1'. The training also addressed particular skill requirements needed on site e.g. the ability to do curved and arched brick work as well as building in straight lines. TAFE was very co-operative and designed a tailor-made course for delivery on site.

The commitment of senior site management and support from the sub-contractors appear to have been fundamental ingredients for success. In addition, all trainees were selected on the basis of competitive selection process. This meant no trainee was there against her/his will. Substantial

support from public funds (i.e. about \$3,000) per trainee also appears to have been very important for the success of this training initiative. Most of these funds came from the Federal Government's 'Working Nation' Initiative together with special grants from the Office of Labour Market Adjustment, Australian National Training Authority, Assistance to Firms In Change as well as TAFE.

***MBA Build-A-Job Program: W.A. and NSW: (Trades Level).***

This program was initiated as a national employment generation scheme for disadvantaged youth. It involved indenturing apprentices into a 3 year (but competency based) program, whereupon they exit as a tradesperson. This program differed from the standard apprenticeship in that an initial 6 months of intensive off-the-job training was provided by TAFE up front (ie before the apprentice set foot on a work site). The following 24 months were spent on the job with some TAFE attendance required, before entering as a '4th year apprentice' after 30 months.

The program appears to have been successful in finding employment for most participants. In W.A. the program was reported to produce graduates at 36 months who were equivalent to general entry apprentices. In NSW, however, one commentator was of the opinion that the graduates were 'a little undertrained'. There were problems also with TAFE and its assessment of competency based training. It was also commented that the exit points of the program were still limited and relatively confined to traditional apprenticeship areas.

***Queensland Housing and Construction Group Training Scheme (Trades Level).***

This was an initiative between Queensland Construction Group Training, the Queensland Department of Housing and TAFE. Under this arrangement, Group Scheme apprentices completed intensive bursts of on- and off-the-job training on various public housing job sites. TAFE teachers went onto the sites to teach practical and theoretical components. In each case the theory component was delivered just before the ideas were to be used in the field. This close alliance of theory and practice was reported to provide education of the highest quality in key construction skills.

The major problem with the project was that there was a supervisory cost to the employer of having a large number of apprentices on the job. This was estimated at about 16% of total labour costs. While the Housing Commission had the capacity to absorb this cost, this may not be the case for the private sector. There is some concern that the Queensland Government may withdraw its involvement from this arrangement in the near future to reduce construction costs.

#### **4. SOME LESSONS**

On the basis of this material we have drawn the following tentative conclusions:

**(a) Extent of Innovation**

There appear to be a large number of innovative approaches to improving skill formation in the construction industry. These initiatives concern changes at all levels of the education and training system: school, TAFE and higher education as well as approaches to on-the-job training.

## (b) Limited Numbers of Employees and Firms Involved

The number of workers and firms involved in these new approaches is limited. Thus, while the nature and extent of innovation is encouraging, the proportion of firms and employees involved is modest. We suspect that no more than a few thousand employees are involved Australia-wide in the projects documented. Fewer than a dozen companies appear to be driving change although many appear to be willing to participate if someone else (especially a head contractor) takes the lead. The area of greatest likely growth in the short run is school students.

## (c) Sources of Innovation

Innovation appears to come from one of three sources:

- Educational institutions (eg schools and TAFE)
- Project managers on particular sites, especially large sites (eg Liverpool Hospital Redevelopment, Glebe Island Bridge, Parallel Runway Sydney Airport)
- 'Industry' based institutions operating in particular local labour markets on a bipartite or tripartite basis (e.g. Building Industry Group Scheme in Melbourne, or Build-a-Job).

**The major gaps in innovation appeared to be at the 'enterprise' level.** Most companies appear to regard training as a cost that they should minimise. They will participate, however, if cost effective structures are created and organised for them.

## (d) Ad hoc Nature of Innovation

The links between the different parts of the industry's skill formation system are ad hoc at best. Innovations often exist as long as motivated individuals drive them and then lapse when they leave or when a particular project is finished. The key systemic weakness appears to occur at enterprise level. Most enterprises, large and small, appear to have few training arrangements beyond the apprenticeship system and co-ordination between enterprises over matters other than apprenticeships is almost non-existent.

## (e) The Importance of Public Expenditure and the Limits of Private Sector Responses to Skill Shortages

Most innovation has been promoted by public funds (eg pilot funds for the AVTS, labour market program funding under 'Working Nation'). **We could find only a few examples of innovations in training that were devised and implemented purely within the private sector and these were often supported by industrial agreements** (e.g. Glebe Island Bridge, Parallel Runways at Sydney Airport, MCG Site, Darling Park). Where private firms face a training problem they appear to rely on poaching employees from

elsewhere by bidding up wages. Wage pressure associated with some parts of Olympic construction site appears set to increase wages soon in response to impending skill shortages.

### **(f) How to involve employers in new training initiatives**

The key to involving employers more actively appears to include:

- *Designing training so that it is integral to improving competitive performance*

(eg the Liverpool Hospital Redevelopment needed a large number of bricklayers in a short period of time while holding wages and relocation costs to a minimum: innovative training arrangements were required to meet this demand)

- *Designing training so that it minimises overhead costs associated with supervision/on-the-job training*

(eg Liverpool Hospital Redevelopment: sub-contractors argued that the key problem was not apprentices' wage levels, but the negative impact of requisite supervision on tradespeople's productive working time on the job. At PEERs, the training co-ordinator matches apprentices training needs to the type of work undertaken by different sub-contractors in the electrical and plumbing trades, and so minimises supervision costs)

- *Designing training so that trainees are immediately productive on the job*

(eg BIGS apprentices are not released to host employers until they can earn their wage plus 25%)

- *Ensuring off-the-job training complements skills that are actually used on-the-job*

(e.g. Queensland examples of on-site classrooms, and teachers delivering theory just before different parts of a job were undertaken)

- *Ensuring the additional costs of training are borne by either the trainee or the government<sup>1</sup>*

(e.g. The role of the Housing Commission in Queensland or labour market programs).

### **(g) Innovation often involves giving recognition for prior learning**

Many of the examples of innovation documented involved workers gaining official accreditation for skills already held. This was aided by them

<sup>1</sup> Note that this is an empirical finding. We do not believe that this is a desirable policy objective. Quite the contrary - we believe employers collectively should make a greater contribution to training in the industry.

receiving top-up 'theory' training and certification from competent assessors. These aspects of innovation were regarded as important for increasing the flexibility of the current workforce. They also highlighted the importance of training reform involving the enhancement of skills currently held by employees, and not just improving training at entry level.

**(h) Innovation often involves simultaneously improving efficiency and equity in the industry**

Training reform in this industry often involves giving training and employment opportunities to disadvantaged people (e.g. long term unemployed people, school 'dropouts', those with limited literacy skills). Well designed programs, such as a number of those promoted in Western Australia, reveal that improving the labour market situation of people with characteristics such as these need not come at the expense of productive efficiency on-the-job.

## **5. POLICY OPTIONS**

**(a) Support the Status Quo**

There is no doubt that innovation of the kind documented is likely to continue, especially on some of the big sites and in areas where TAFE teachers show the initiative. As currently structured, however, the status quo is unlikely to make a serious inroad into the impending skill shortages confronting the Sydney construction labour market.

**(b) Develop a Register of Training Innovation (especially among small contractors)**

This paper aims to stimulate debate. We have only been able to document those cases of 'best practice' reported to us by a limited number of informants in a short period of time. We believe that there are many 'unsung heroes' in the industry, many of them small operators. Identifying them and documenting their experiences will require substantial resources. Developing a more comprehensive register will be important if the next stage of reform is to occur within the industry. There can be no doubt that the public sector and key large businesses are committed to comprehensive training reform. The next fundamental challenge will be to get small business to embrace change. Examples of how this has already been achieved could provide a very powerful tool for diffusing 'best practice' amongst the smaller firms. They could be especially useful in identifying how improved approaches to training can be integrated with ongoing business and work practices.

**(c) Trial New Approaches to Regional Co-ordination of the industry's Skill Formation System**

There is no shortage of good ideas or practices. Equally there is no shortage of reasons to improve training arrangements: good quality work and potential labour cost pressures are perennial concerns of the industry. **The solution lies in establishing effective systems to ensure that the good practices are adopted to address the problems.**

We believe the major priority is to establish improved practices at the local labour market level to ensure better networking of site level, school and TAFE initiatives. Some local regions already have successful group apprenticeship schemes. BIGS and PEERs are cases in point. Current arrangements, however, focus on trades level skills. There is need to improve skill formation at pre- and post- trade levels as well. In this context it is important to note that the industrial skills centre at Penrith catering to non-trade level employees is in receivership.

Our specific suggestion is that more attention should be devoted to establishing regionally based centres to co-ordinate improved site level training. Better regional co-ordination would also provide the basis for improving better linkages between on- and off-the-job training.

Particular initiatives that could usefully be considered are:

- Each head contractor appointing an education and training manager (if they do not already have one)
- The education and training managers together with relevant union representatives and representatives from subcontractors, co-ordinating the operation of a 'trial' regionally based skills centre (e.g. Central Sydney CBD or South western Sydney)
- Operating such a skills centre on the principles identified on p.14 above (i.e. integrated in mainstream business practice and at minimal additional cost to individual employers)
- Developing the skills centre to complement and improve networking between existing elements of the industry's training system, both on-the-job and institutional in nature. Funding for this co-ordination role could be sought from a number of sources:
  - the new Federal Government's Modern Apprenticeship and Training Scheme (announced in 1996/7 Federal Budget)
  - the NSW Government's construction industry skills development fund
  - building owners.

These funds should be sought on the basis that wage pressure arising from skill shortages in construction will be detrimental to the economy in general and owners in particular. Investment in training now will help limit the scale of these problems as well as improve the quality of life for all involved in the industry. Improved training arrangements will also help stabilise employment in the industry and make it a more attractive sector to new labour market entrants.

- Making skills centre a focal point for improving labour market information on the construction sector to help anticipate labour demand, and to assist in the design of relevant training to meet that demand in the future.
  - Making skills centre responsible for monitoring the quality of training outcomes to ensure that improved work site training practices actually result in workers achieving recognised, transferable skills.
- (d) Reform project management practices so that skill formation is integrated into major projects in the future.**

It is obvious that a major source of innovation in training has involved site level initiatives of project managers and unions operating on particular construction sites. Currently such innovation occurs on an ad-hoc basis. Consideration could be given to identifying ways to ensure that such arrangements became standard throughout all building sites. This could involve all project managers being obliged in the tendering process to include well developed skill formation arrangements in projects falling under their control.<sup>2</sup> Such arrangements should be developed on a joint basis with unions and representatives of contractors working on the site.

## 6. CONCLUSION

Training initiatives devised in isolation are unlikely to succeed in this industry given its profoundly fragmented nature. If approaches to skill formation are to be improved it is essential that they are integrated with the wider processes of industry reform. Fortunately, NSW in the late 1990s is emerging as a region where the leading public and private sector construction organisations are converging in their approaches to improving business and work practices. The approach to reform concerns relations within as well as between enterprises. This is fertile ground in which to be devising proposals for training reform. The challenge is to move beyond statements of intent and to change daily practices amongst small firms. This paper has outlined how this has occurred amongst some parts of the industry to date. It is essential to now develop mechanisms to promote the diffusions of new practices and establish new arrangements facilitate their adoption. Some options on how this may be achieved have been outlined. It is important that others join the debate on how the reform the process can be deepened.

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<sup>2</sup> Note that the Queensland government for example, has given preference to tenderers who participate in a workplace skills program.

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## **8. PERSONS INTERVIEWED**

The Construction Industry Forum was keen to contact key informants from as many States as possible to ensure that they had the benefit of a range of experience in their deliberations. Within the confines of a short period of time and budget, ACIRRT attempted to obtain a nationally representative sample of persons who were considered best positioned to give examples of innovative training arrangements. Time and budget constraints made an exhaustive literature search impossible.

A full list of interviewees is given below.

It is important to note that there was a high degree of cooperation amongst all people contacted. Indeed, many people felt the idea of an 'ideas' forum for the industry was long overdue and several of them said that they would be interested in joining the Forum.

Evelina Chan, NSW TAFE, (Building Industry Training Dept).

Jim Gallogley, Barclay Mowlem

Scott Gartrell, Baulderstone Hornibrook

Douglas Greening, NSW ITAB

Dave Higgon, Multiplex

Wolfgang Jovanovic, Baulderstone Hornibrook, Melbourne

Brian McClenaghan, MBA NSW

Stuart Maxwell, CFMEU

Terry Reeves, PEERS Group Training Scheme, SA

Rosemarie Risgalla, NSW Public Works and Services

Greg Shannon, Qld ITAB

Lynn Sherwood, W.A. ITAB

Walter Sommer, Summer and Associates, Qld

Bruce Walker, Vic. ITAB

Peter Wilson, Construction Training Australia

Ron Winzenberg, Tas. ITAB

## APPENDIX 1

### A SUMMARY OF RECENT SKILL FORMATION INITIATIVES IN THE CONSTRUCTION INDUSTRY

#### School Programs

<i>Names of Program/Participants</i>	<i>Type of Training</i>	<i>Comments</i>
1. Work experience Yrs 9-12 :Nationwide	Unstructured on the job exposure to workplace	A look at the work in the industry, rather than training in it
2. School to work programs NSW Yrs 11-12	200 hours unstructured on the job training, plus classroom based instruction.  Competency based  A Content Endorsed Course Outcome: ASF1 12 months off a trade course 1 or 2 unit non TER subject for HSC	Some concerns about the validity of classroom assessed competency  Some concerns over the inadequate level of resources devoted to schools to run these courses  Some rivalry between schools and TAFE.  Strong take up rate
3. Dual recognition Course, Materials and Handling Victoria, Yrs 11-12	As above  Content: OHS, maths, building basics, hand tools, office and business	Pilot phase only.
4. School to work pilot program, WA	Industry money used. Used industry skills assessor, external training provider and used a skills centre.  Involved starting vocational work whilst still at school	Targeted at least motivated students  Got a good evaluation report
5. Basic Industry Skills Program, Q	2 year course  240 hours integrated training  Come out at ASF 2  There is an optional on the job component	Extremely hard to get work placements for students. (One innovative arrangement: got Rockhampton Council to provide placements doing jobs in shire)

## Operatives/Outside Trades Level Programs

<i>Names of Program/Participants/ Provider</i>	<i>Type of Training</i>	<i>Comments</i>
<b>(a) Vocational Education Reform Based Initiatives:</b>		
<b>(i) School/TAFE Based</b>		
1 Pre-Employment course, Queensland, Tas	Provider: TAFE 600 hours to complete course (can do 240 at school) competency based structured workplace component, exit at ASF 2	Students get useable skills as from day 1  Some problems convincing employers that students exist having done 55% of time taken for trades  Means that first part of apprenticeship is unpaid, and apprentice has had experience in apprenticeship before signing up (less likely to leave)
<b>(ii) Employment Based</b>		
2. VC Levels 1 and 2	Designed to replace apprenticeships with entry level training for operative level occupations	
<b>(iii) Industry Based</b>		
3. BETA Traineeships Nettforce Coy. of the Industry: A joint MBA/CFMEU initiative	Outcomes to ASF1 (CW 1 and CW2)  About 150 trainees nationwide  Purpose is to give skills recognition to labourers  On and off job component, with TAFE drafting curriculum based on national competency standards Supposed to articulate to trades level	A new concept: only just beginning  Had problems getting employers to employ them  Reported to be poorly articulated, and in need of quality assurance (Found that Nettforce only delivered parts of the curriculum)
4. Language and literacy programs, WA ITAB	Interactive training using multi media: CD rom (responding to computers, not books) Also integrates OHS and other training issues Self paced	Need training room with computer

**(b) Multi-Employer Based Initiatives****(ii) Skills Centres**

5. Labour Market program: Industrial Skills Centre, Penrith, NSW	Off-the-job training at the skills centre;  On-the-job experience unstructured with local contractors	Networking with local contractors to find placements and have the skills taught off-the-job linked in at the right time with the skills required by local contractors a distinctive feature of this LMP  Centre now in receivership
6. LMP's in general For long term unemployed	Theory and practical training  Short course in a specific area	Outcomes did not relate to broad based nature of competency standards: tried to teach a small area in a short time  Failed attempt to get jobs, not really about training  Not too many supporters
7. Blyth Skills Centre, SA For unskilled, and for group scheme apprentices on down time	Pre vocational carpentry and joinery course  100% institution based (at skills centre)	Not commenced yet

**(c) Site Based Innovations**

8. Glebe Island Bridge: Baulderstone/Hornibrook	Courses for semi-skilled (eg Rigger/Dogman), and some RPL  TAFE came on site and delivered courses specifically tailored for the project, but still accredited by TAFE	TAFE on site  Unique due to the size of the project
9. Parallel Runways: Baulderstone Hornibrook, Sydney	2 types of training: *Industry training at semi-skilled level (rigger/dogman etc) *training in performance assessment, KPI, conducting meetings, communications, total project concept etc  Training conducted on site in site shed during wet time	Project finished ahead of time and under budget
10. Language and literacy course:Leighton Contractors, Brisbane	On site literacy course, combining technical skills (plan reading, OHS etc) with literacy skills	Only one of a package of training initiatives on this large site  Found that literacy training in a hot shed after a full days work not particularly

			productive
			Stigma attached to course prompted consultative committee to recommend renaming the course
			Some subcontractors not happy about releasing employees to attend the course.
11. Aquatic Centre, Hobart, TAS (Labour Market Program)	Centre, Market	Joint Initiative Hobart City Council/ Fletcher Constructions	Only possible because of Commonwealth/state funding, and because it was made a big political issue
		6 months of training: practical and theory (although theory delivered by TAFE on site) in Structures	
Doing parts of ASF 2			

**(d) Initiatives Combining Government, Multi Employer and/or Site Based Elements**

12. Stanwell Skills Development Program, QEC, Queensland		Training on skills centre on site	Government giving preference to building tenders from companies who take place in workplace skills program
		Centre open after working time, so open to unemployed and public	A huge project ( 7 years)
		Fees subsidised by DEET Accredited, high quality training	Seems to have been enormously successful in generating a 'training culture', but not entry level
		Some RPL	
13. Aquatic Centre, Hobart, TAS (Labour Market Program)	Centre,	Joint Initiative Hobart City Council/ Fletcher Constructions	Only possible because of Commonwealth/state funding, and because it was made a big political issue
		6 months of training: practical and theory (although theory delivered by TAFE on site) in Structures	
Doing parts of ASF 2			

E. Chan, TAFE commented that there had been a noticeable increase in persons who were or were about to, perform semi skilled tasks such as rigging on high rise sites attending the formal TAFE training course, and so getting accredited.

## Trades Level Programs

<i>Names of Program/ Participants</i>	<i>Type of Training</i>	<i>Comments</i>
<b>(a) Vocational Education Reform Based Initiatives</b>		
<b>(ii) Employment Based</b>		
1. Standard apprenticeship	4 years, time based training, with single employer providing unstructured on the job training, and TAFE delivering of the job either 1 day per week, or as block release	Supposed to be changing from time based to competency based
2. Civil Operators Traineeship NSW (Eg Hunter Valley), SA	Trades equivalent qualification for plant operators.  4 days /week on the job; 1 day /week off job at skills centre	First ever formal training course for operatives  Only just beginning
3. AVC (ASF level: Certificate of Building and Construction (Fitout and Finish): Vic, Q, WA	Structured workplace learning, linked in with industry agreed competency standards Curriculum collaboratively developed with TAFE (but not different to content of apprenticeship course) Flexible entry and exit points Broader range of competencies than one trade 15 weeks full time on the job; 2 years contract with a builder (1st year some off the job on block release) Guaranteed a job by MBA	Commented that difference between AVC and apprenticeship was delivery methods, not training content  Technically illegal in NSW because vocational training Act requires indentureship
4. Roof Tiling Apprenticeship	Apprenticeship with on/off the job components. TAFE delivers off job training  On and off job components are integrated, so off the job training is structured, and TAFE awards ticket based on successful completion of both off and on the job components	A new initiative. New had any formal training course in tiling  Structured on the job training is a new initiative  Will commence next year  Initiative is a joint TAFE/industry initiative, still drawing up the agreement between the two parties

**(b) Multi-Employer Based Initiatives**

5. Group apprenticeship schemes eg: BIGS	As above, but with multiple employers Standard delivery/ curriculum for group training	One of few group trainers specifically catering for the building and construction industry
		Apprentices do a block of off-the job-training first (standard pre apprenticeships course content), and are not located on site until BIGS can guarantee trainee will return 25% profitability (ie 255 above award wage)
		Some thought that the biggest advantage of the scheme was that BIGS was very for the company
6. Plumbing Industry Group training scheme, Vic	Group apprenticeship scheme. Structured on the job training: each apprentice has an individual structured training program designed for them, and they are rotated through various employers and fields of plumbing	Structured work based learning is a new thing
7. Plumbing, Electrical Electronics Refrigeration Group Training Scheme, SA	Industry specific group training scheme. TAFE do off the job training  Individual training plan for each apprentice, fulfilled by selective on the job training  ie First year apprentices are sent to employers providing the most basic kind of work; 4th years go to more complicated jobs: therefore graduates are multi-skilled	Non profit organisation  Problem in getting apprentices from school with the degree of literacy/numeracy required to complete the apprenticeship

**(c) Site Based Innovations**

8. Construction of Southern Stand, Melbourne Cricket Ground	TAFE staff would go on site to deliver customised training to trainees (trades level)  There was assessment and accreditation of skills for those who had the skills but were not formally qualified (RPL)	Training provisions set out in site enterprise agreement  TAFE teachers underwent extensive training consultant program  Program also conducted at Toyota site in Vic by Holland Constructions  Pitched at trades level, but
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		there seems to be no reason why it couldn't apply to below trades level employees
9. Darling Park Project, Civil and Civic, Sydney	Structured, work based learning: *job rotations *mentors allocated (work area team leaders) *formal assessment and recognition of skills by the enterprise	Devolved nature of training a bit special
10. Melbourne Citilink Project: Boulderstone Hornibrook	600 blue and white collar staff to be the subject of an individual training plan. Full time training officer to be on site	Not yet set up: scant details, and depend on union demands

#### **(d) Initiatives Combining Policy, Multi-employer and/or Site Based Elements**

11. Queensland Housing and Construction Group Training Scheme	Initiative between TAFE and Dept of Housing, where apprentices do apprenticeship 100% on public housing sites (also do some pre trade level training in this way). Teaching shed on site by TAFE teachers	16% supervisory premium (ie cost of supervision) has to be borne by Housing Commission (mightn't work for private sector)
12. MBA Build a Job NSW, WA.	3 year contract with MBA NSW. First 6 months at TAFE, next 6 months on job with some time at TAFE Next 12 months on job with some TAFE Next 6 months: 3rd year apprentice Next 6 months: 4th year apprentice	Those who completed course came out with a trade certificate  All who wanted jobs as tradespersons found them  Possibly a little undertrained  Some problems with TAFE, WA.
13. WA Live Work Projects (ITAB and WA Dept of Training and Housing)	Various public housing sites in WA used as sites for 100% on the job training for apprentices	Purpose was to ensure that apprentices continue to be trained and not sacked in times of building industry downturn

- Queensland ITAB Comment: general shift in Q to having training off the job training done on adjacent to work site.

## Post Trade Level Programs

<i>Names of Program/Participants</i>	<i>Type of Training</i>	<i>Comments</i>
1. Associate Diploma (Building/Construction, or Architectural Drafting)	4 years part time with relevant although unstructured work experience or 2 years full time in depressed times (3 months practical)	Some concerns about relying on trades level teachers to teach the course
2. Building Degree: Tas program with Uni of Newcastle	Trades level employees can access Bachelor degree  TAS ITAB has 6-7 guaranteed places with New. Uni  ITAB pays fees  Degree completed by correspondence, but also a workshop at Tas ITAB where there is tutoring  RPL	Idea behind it is to begin to provide life long career path in industry (not just stopping at trades level)
3. Training of workplace assessors, Queensland	Training to assess skills, identify skills gaps amongst apprentices and trainees	
4. Bricklayers Training Scheme, Tas ITAB	Train the trainer program., where employer is trained by ITAB in encouraging / inculcating in apprentices the ability and motivation for continuing learning beyond trades level	Only in process of development

### Notes:

- \* These projects have been completed recently.
- The 1993 CIDA case studies are yet to be entered above.