

AN OVERVIEW OF FACILITIES MANAGEMENT

commissioned by Dusseldorp Skills Forum

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1. INTRODUCTION

At one level, 'facilities management' is a simple and an accurate label for the work done to ensure that a building or building complex works efficiently and effectively, that it meets the needs of the people active inside it. But because 'facilities' is such a vague term, it doesn't deliver the kind of clear concrete image that helps people know what it's referring to. We can picture office buildings and shopping centres, hospitals and sporting complexes, airports and arts centres. But facilities? Not really. And 'management' does not add much clarification. It doesn't suggest that 'managing the built environment' includes designing lay-outs, improving sustainability, negotiating leases, analysing business strategy, maintaining plant, mitigating risk and a range of other interesting skilled work.

The amorphous nature of facilities management is well illustrated in the tale that is told – and is true – that when the 14 members of the strategic industry leaders group convened for the first time for the Commonwealth government's Facilities management Action Agenda, they went round the table asking each to define 'facilities management'. There almost as many different answers. Industry leader and Immediate Past Chairman of the Facility Management Association of Australia (FMA Australia), Stephen Ballesty, regards the ultimate consensus on 'Managing the Built Environment' as the title of the FM Action Agenda's 2005 strategic plan as a watershed in the industry's self image and wider recognition of its role and contribution.

It remains the case, however, that facilities management – FM to its practitioners – can be frustratingly difficult to pin down. This is a pity as it is an intriguing and important field of work but one that is little known or appreciated.

Part of the difficulty is that the task of managing the built environment is exceedingly multifaceted. It involves technical services that keep the physical plant operating (e.g., lighting, air conditioning, maintenance, cleaning, etc). Security, risk management and business continuity are also FM responsibilities. So, too, accommodation lay-out and relocations. Further, it is not simply a matter of providing A, B and C services but integrating them so they might reinforce one another. At a higher level still, a facilities manager has strategic responsibilities: rationalising assets and defining policies to support business objectives. One must remember, too, how many different types of facilities there are.

A further problem with neatly pinning FM down comes about because facilities management is a relatively new field. Building services themselves are not new, of course. Nor are many of the other tasks involved in accommodating customers and staff or in making business decisions about building assets. However, recognising there is a coherent discipline overarching these tasks developed only in the 1980s with the outsourcing that was the hallmark of that decade. The overall coordination and responsibility of outsourced services began to be seen for what it was: a separate set of skills and competencies*

* This history sows seeds of tension between 'old-fashioned' building service personnel and the newer ranks of professional facilities managers. Particular issues generated by this tension are discussed later. In this report facilities management is taken (and must be taken, as it is by many senior facility managers themselves) to encompass *all* of the skills and roles involved in ensuring the built environment operates effectively, enhances the activities of staff and customers in it, and supports organisational goals – *and* does so in an environmentally sustainable way.

The recognition that FM is a unique discipline (or conflation of disciplines) has also been driven by a new appreciation of how important a building is to an organisation's success both in terms of workers' productivity (and willingness to stay) and the public's perception of the enterprise. Deakin University, which offers the only undergraduate program in Australia in facilities management, provides one of the more cogent descriptions of FM:

Facilities are second only to human resources as the largest 'asset' for an organisation, and the role of facilities manager is to ensure that the physical infrastructure is strategically aligned to the organisation's core business – incorporating financial, social and environmental objectives over the entire life cycle of property investment and ownership. The role is becoming critical as built infrastructure increases in complexity and value and has more pervasive social [and environmental] impact as a user of natural resources. [www.deakin.edu.au/scitech/a+b/courses/facMgt5.php]

The relative newness of facilities management lends it a natural dynamism; its horizons seem continually to expand. It is now, for example, clear that FM will have a central role to play in building a sustainable future by 'greening' the built environment. The FM Action Agenda, a 3-year innovation and reform program supported by the Department of Industry, Resources & Tourism and a wide range of public and private sector industry stakeholders, captures well the spirit and energy of the industry. It not only addresses sustainability but such critical issues as: the need for innovation; education and training; regulatory reform; and industry recognition. Perhaps what best demonstrates the commitment of facilities managers to the advancement of their field is the willingness of extremely busy people to devote significant time to achieving the objectives of the FM Action Agenda.

The purpose of this report is to describe facilities management in terms of the work it does, the range of skill it encompasses, and the current provision for education and training (or lack of it). In each of those areas, attention is drawn to intersections with a sustainability agenda.

2. FACILITIES MANAGEMENT: A WORLD OF SKILLED WORK

The Facility Management Association of Australia (FMA Australia) developed an accreditation system in 2000 that defines three levels of skill: (i) 'practicing FM' where the role is focused on supervision of operations; (ii) 'managing FM' with responsibility for facility outcomes; and (iii) 'leading FM' which is a senior strategic role. The emphasis is on the professional managerial and supervisory aspects of 'managing the built environment' because the Association is, rightly, concerned that at the moment 'facilities manager' is not recognised as an ABS occupational category, it is not listed on government careers websites and doesn't confer eligibility as a skilled migrant.

Most of today's senior facility managers have arrived at their position through a series of accidental steps – "we mostly fall into it", as one put it. The box on the next page illustrates the journey some of the people interviewed have taken from a first job that would not have appeared an initial step into FM but, in retrospect, often was.

In this report the field of facilities management includes *operators* – that is not just their supervisors and managers, but people 'on the tools' (who would identify themselves as electricians, plumbers, security officers, etc) – whose skills are required if a facility is to run

smoothly and sustainably. In fact, an initial vocational qualification is a promising step into a later career in facilities management itself. Norman Jackson who lectures in RMIT's post-graduate Facilities Management course believes that five years in a trade is not only an eminently suitable preparation for a Masters degree in FM but a preferable route into the profession, "such people have a real hands-on understanding of how things work and of how they fail and, thus, of how to manage the risks". It is a pathway many have taken. A 2006 survey of the FMA Australia's membership found that while only 4% of respondents had *only* a trade qualification; 33% had a trade plus a degree and/or post-graduate degree [Hays 2006].

WHERE THEY CAME FROM TO BE FACILITIES MANAGERS	
NOW	THEN
Senior Facilities Manager Investa Property Group	left school halfway through Year 11 "I didn't know what I wanted to do; thought it would be something outside"; became an apprentice electrician working on high voltage construction; later decided "I didn't want to be pulling wires all my life and I wanted challenges" so he moved into building maintenance – and on to FM.
Team Leader Building Strategy Boroondara City (Vic)	an economics school teacher was involved in an innovative program for Yrs 7 and 8 and Department of Education asked him to come in to write material about the program; asked him while he was there to write specifications for some classrooms... eventually did a post-graduate diploma in engineering maintenance and went on to run his own FM company.
General Manager, Facilities State Sport centres Trust (Vic)	draftsman; later did a diploma course in building; came to Australia and got a job in the mining industry managing contractors – not an easy role since was contracting engineers as well as cleaners in a highly unionised industry – then to FM.
National Facilities Manager Marsh	registered nurse for many years; she cites making six international moves with her family, setting up 18 homes as example of being "life trained" for sophisticated FM work.
Manager Property and Security Services Holmesglen Institute of TAFE	left school at 15 for apprenticeship in air-conditioning and plumbing; eventually started his own business, but through it all attended lots of night school including technical training – welding, building inspections – through to a Master of Education Leadership.
Project Manager APP Corporation	architect; while studying "I got off at the wrong floor in the architecture building [at Sydney Uni] and there was a poster about FM outside the lift. I enrolled in a unit. Lots of good speakers but the best was meeting the other students: electricians sent by their companies – it wasn't a bunch of privileged people – I loved it. I like working with them."
Manager Facilities and Security State Library New South Wales	BA Hons in history; at State Library worked in the binding section for many years, then into a series of other departments – in fact, in almost every area of the Library.

To present a picture of the breadth (and depth) of skills required in servicing and managing the built environment, three general categories of work are described:

- building services: technical, operational skills that keep buildings functioning;
- space utilisation: lay-outs, fit-outs, relocations;
- professional advisory: translation, integration, alignment with business objectives.

The three are separated to bring some order to the material but the division into the technical, the 'human' and the strategic runs the risk of being dangerously misleading. Many tasks, such as risk management and procurement, are done by each group and have to be done well by each group. More importantly, the separation contradicts the whole FM philosophy that people and their building form a single ecology where each influences the functioning – indeed, the well being – of the other. Richard Mayes, Head of Facilities Management Department at the Reserve Bank of Australia, gave an illustration from within his own staff of 45:

“We have a service desk coordinator. When someone wants a new power point in their office or someone has detected a spill, they contact him. He logs it and dispatches the required service request. So the person is a critical information hub, he is a part of the FM team, but he is not a facilities manager in the professional FMA Australia sense.”

The interdependence of tasks can be seen very clearly in the section 2.4 where the skills involved in greening the built environment are discussed.

2.1 building services: technical operational skills in FM

To list the skills required to ensure facilities are operated and maintained properly would be an impossible task. They include running all of the physical plant – HVAC (heating, ventilation, air conditioning), lifts, electricity, plumbing – as well as fire protection, safe access, pest control, security, cleaning, painting, carpentry, maintenance, risk assessment, etc. The problem with such a list is that it fails utterly to supply the colour and challenge in 'operating and maintaining' the built environment. A few stories from the field may at least hint at what people on the ground do when they are not, as one non-engineer put it, “simply enjoying the hum of the air conditioners”.

- The Sydney Opera House is the site of the Facilities Management Exemplar Project which is an initiative of the FM Action Agenda and was delivered via the Cooperative Research Centre (CRC) for Construction Innovation in conjunction with a number of partners. One component of the FM Exemplar Project was developing a Building Condition Index (BCI) so that the quality of cleaning and maintenance could be measured in a fair and transparent way. As one report of the Project pointed out:

More than in most buildings, FM at Sydney Opera House is a core business function directly contributing to the visitor experience and therefore to the success of the business. For many visitors to Sydney Opera House, including those who “tread the boards”, the building is the attraction — part of the experience. [Akhurst 2006]

The BCI is composed of four elements: overall impression, cleanliness, tidiness, fabric condition. Cleanliness, for example, is rated on a scale from 100% 'as new, no signs of wear and tear' down through 90% 'totally free of dust, litter, stains, odours' to 80% 'minor signs of dust, no litter or odours ... 60% is 'obvious dust, litter, stains, odours ... 0% is when the dust, litter, stains and odours become hazardous. The conditions are

recorded prior to opening the House pre-show both by facilities management staff and Front-of-House managers and the venue managers use the same indices post-show.

The crucial role of IT is illustrated in the digital modelling research stream of the Sydney Opera House FM Exemplar Project. It demonstrated significant benefits in digitising design documentation and operational and maintenance manuals. Since Sydney Opera House did not have digital models of its structure, this was an opportunity to investigate the application of digital modelling using standardised Building Information Models (BIM) to support facilities management. The report, *Adopting BIM for Facilities Management*, can be downloaded from <http://www.constructioninnovation.info/index.php?id=44> .

- Regulatory compliance is a critical part of *building care* – the phrase Norman Jackson at the Boroondara City Council (in metropolitan Melbourne) prefers to *building services* for the 257 buildings that belong to the Council. Jackson has spent \$400,000 on fall arrest devices on roofs to meet OHS regulations, and may have to spend another \$100,000 a year for the next three years to complete the work, although they are also looking at ways of taking people off roofs by arranging things so maintenance and cleaning can be done from ground level.
- At the State Library NSW, Jim Sinclair had a problem with lift buttons, they took forever to replace because they had to be made specially each time. Why not replace them with a standard part? No reason. They've done that now. "Part of my job is to think about what will make a task easier next time".

Some issues he cannot deal with so easily. The floor above the stacks in the 97-year-old Mitchell Wing is made of very thick glass. "The original intention was to let natural light in – it doesn't actually do that, the glass is too thick. The fire authorities are spooked by what would happen in a fire with the glass melting. But it's heritage listed and the glass cannot be taken out."

- One of Peter Murphy's biggest headaches at the Melbourne Sports and Aquatic Centre is finding opportunities to do maintenance on a facility that is open to the public from 5:30a.m till 10:00pm. Hosting part of the FINA World Championships has given him a rare chance to close pools to check and replace tiles.

On the other hand, hosting the Championships has meant having to build bleachers over three quarters of the main 50-metre 10-lane swimming and diving pool to accommodate spectators for the FINA diving competition. One of their concerns was the weight of these bleachers but even the task of moving so much "stuff" in and out of the building for the Championships without damaging it required very careful planning and oversight.

One of the problems in attracting people into facilities management is the distance between a person starting off in a trade or other technical arena and finally applying those skills coherently to 'manage the built environment'. Current entry level qualifications and certification do not lead to, or even suggest, a built environment mindset. Who acquires such a mindset and how or why is something of a mystery. It appears to develop primarily where it is specifically encouraged. Several of the facilities managers interviewed made a point of saying that they were encouraging cleaners, for example, or security personnel to think more broadly about their role in the building. Security officers, for example, might look not only for human deviance but could check lights, toilets, etc for other deviations from the norm. The

idea is for them to see their role as the continuity of a safe environment which puts a whole different complexion on their work. Encouraging this broader view on a wide scale is relatively recent.

Outsourcing exacerbates the problem. A significant portion of building services is delivered by contractors where the duties may be tightly specified which is not conducive to taking a more holistic view of their role in contributing to the ultimate task of managing the built environment. There is an important issue to be addressed in bridging the distance between individuals acquiring the specific skills used in building services and seeing the attractiveness of applying them in the context – almost the moral context – of contributing to a more productive and sustainable built environment

Two further points about the skills required in building services are worth noting here:

- The various facility systems (HVAC, especially) and the integrating building control systems are likely to become increasingly complex over the coming years, not least to make facilities ecologically sustainable. Thus the technicians operating them will need to have high level skills which are regularly up-dated;
- *Everyone* in building services needs to have good communication skills, from the most technical operator to the person changing a light bulb. The person changing a light bulb? “Sure, he wouldn’t need interpersonal skills if he talked only to light bulbs all day long. But he actually has to discuss his task with the person sitting under that light.” Paul Akhurst, Director Facilities at the Sydney Opera House has spent his seven years at the Opera House breaking down the perception of ‘secret engineers’ business’. Building services kept out of sight when things were working okay; they were only seen when something stopped working. He insists that they go out and make contact when the air conditioning is humming nicely, as it were.

2.2 space utilisation skills in FM

There are two aspects to the utilisation of space: (i) designing where people work; and (ii) adjusting the physical conditions under which they work.

Designing the lay-out of where people work has become something a speciality within FM. In rather grandiose, but nonetheless correct, terms it is the skill and science – the craft – of ensuring a workspace contributes positively to organisational performance. It requires an understanding of how each work environment actually operates:

“You have to understand the constraints and concerns of people and combine that with what, for example, the acoustic consultant can and cannot do”.

An example was the task faced by one facilities manager in relocating staff who counsel migrants, in this case Sudanese migrants almost all of whom had been seriously traumatised. The building they were to move to had to enhance the counsellors’ work and feel welcoming to this special client group. The FM job was fundamentally to translate the two requirements into the design *and* to help staff understand the plans. Few people can look at a plan and really visualise what it will look like when built.

In the facilities management lexicon, the movement and relocation of employees is known as churn. It is formally defined as the total number of employee workplace moves made in a year divided by the number of employees in that facility (and multiplied by 100). FMA

Australia and Rider Hunt Terotech produced a research report in 2001 *Office Churn: The Management of Physical Workplace Change* which examined the impact of facility and workspace types on management practices and the rates and costs of churn. The study which covered over 5 million square metres of office space found that 84 percent of respondents had 'experienced churn' within the preceding two years.

The task of space planning and lay-outs can be demanding. Virginia Austin started working for a financial services company when it had 70 employees. Two and half years later it had 700 employees! And through that period they all had to keep being fitted in. That is an extreme example but work spaces tend to shift quite regularly. Project teams are formed and re-formed; businesses restructure. A rule of thumb is that renovations tend to be pulled out every five or six years.

Relocations can be designed purposefully to change an organisation's culture and work practices or, sometimes, the necessity to change locations is taken as an opportunity to change the work culture. Physical changes prime people for other changes; they can serve as a useful catalyst. This has negative possibilities as well as positive ones. Moving offices, even just moving desks, can generate terrible tensions and emotions that sit "on the outer bounds of rationality". One interviewee's client is moving to an office 1 km away from its present site; there have been stop work meetings about it.

The physical conditions under which people work – temperature and lighting in particular – are the bane of facilities management because people have widely different perceptions of what feels too hot, too cool, too dark, too bright. The FM question is how much control over these settings can be ceded to individuals. One person who lectures in the field tells students, only half jokingly, "a trade secret: put lots of dials around the place but do not connect any of them. People will still dial down the temperature and feel better." Although other interviewees were quite offended when this tale was recounted.

One highly regarded facilities manager says that individual control – what is called the 'adaptability' of the built environment – is over-rated and likely to drive real inefficiencies in energy consumption:

"There is a difference between what people need and what they think they need. My view about the adaptability of work spaces is that the quality of working life is an amalgam of so many different things (not just lighting, drafts, temperature, air flow, humidity – but everything else about how that person is feeling about work that day, at that moment). What would a 5% change in any of the physical features of the environments do to productivity? 0.5% improvement at best!! In our homes we live within a wide band of comfort, why should the office be spot on? The other thing about adaptability is that it is expensive and harder to maintain. I question it. I say 'get over it'."

His professional colleagues would likely agree, but that might not stop people from complaining to their facilities manager that they are not happy in their space: that the lights should be turned up; the air-conditioning turned down, and so on.

2.3 facilities management: the profession's managerial and strategic skills

As pointed out earlier, it is in many ways misleading to carve up the skill sets which keep physical plant functioning well (section 2.1) from those focused on making the environment

comfortable and productive for its human occupants (section 2.2) because they are two sides of the one coin. To make a third distinction – the skills of a professional facilities manager compounds the problem– because all three are integral to facilities management. However, there is this third role and the intent of this section is to highlight the tasks that emerged from the interviews as the bedrock of FM professionals. These are the tasks facilities managers kept coming back to in describing what is special about their work. They are:

- translation of ideas from one stakeholder group to another;
- integration of services;
- strategic alignment of facility management with business objectives.

translation

Time and again people pointed to their role in bridging the different perspectives that are needed to effectively manage the built environment. An example given earlier was translating between the way lay-out designers express their ideas and the way people who will work in the new lay out do (or do not) understand them. But it goes across all the different functions: IT specialists trying to talk to operators, building inspectors trying to talk to supervisors, maintenance technicians trying to talk to occupants, architects trying to explain options to a Board, and so on.

Paul Akhurst's process for prioritising the annual disbursement of the Sydney Opera House's \$19 million maintenance budget is an example of effective 'translation' among different groups. What he does is to run a number of workshops with key staff from FM and from the theatre side as well as the portfolios of tourism, food and beverage, etc. The objective is to understand all their business plans, what they are seeking to accomplish and where or how maintenance would help. That way weaknesses in the asset space are identified but through a cooperative frame.

The interpretative function is particularly prominent in one of the facilities manager's prime tasks: procurement and contract management.

"To give consultants and contractors clear direction, you need to be able to speak their language. You must be able to frame what we are trying to achieve so they understand it. Part of that skill, to be frank, is being able to see through bullshit. A more positive view of the task is building good relationships, partnerships with them. Communication is all"

To communicate clearly, to understand where people are coming from, a facilities manager must take into account the politics as well as the policies of the organisation. As one senior executive pointed out, "there is a huge amount of ego in any organisation. As a facilities manager you need to understand the culture and manage the politics. You need to be managing expectations all the way through."

integration

Much technical service integration relies on increasingly sophisticated building information modelling and on linking computer programs and systems. There is also the integration referred to earlier of moving people from narrowly specified roles so that they are not just carrying out orders but thinking pro-actively and broadly about how well the facility is working (or not). The example given concerned security guards and cleaners, but the same applies to HVAC, plumbing, etc. The roles would still be trade-based but the

individuals concerned would be looking at problems and tasks more holistically. Richard Mayes, Head of Facilities Management Department, Reserve Bank of Australia, summarised the goal:

“I see interdependence in all facets of delivering a working environment that contributes to a sense of well-being among staff, makes a positive contribution to productivity and presents the facilities well to visitors and the public. Getting that to happen depends on the glue we create – the communication – within our department and then between our department and the people using the building, and between our department and our contracted suppliers.”

The facilities management role necessarily involves balancing competing pressures. There is a specialist field labelled terotechnology which sets out the whole life cycle costs of a facility allowing one to see and plan for the costs at every stage. It developed in Britain in the 1970s and is used by Rider Hunt Terotech to good effect since its establishment in 1995. However, the term terotechnology has not been widely adopted although, of course, the pursuit of optimum technical and economic cost of a facility over its whole life span is a task shared by every facilities manager.

The drive to minimise the negative impact the built environment has on sustainability may require trade-offs between operating conditions that optimise the indoor ecology and those that optimise sustainability *and* those that meet business objectives. An example: the Victorian Arts Centre wants the doors kept open throughout the day to encourage people to visit the box office or the gift shop or, indeed, just to come in to admire the art and enjoy the building. Besides people, these open doors attract little birds – somewhat altering the ambience as well as the cleaning task. The open doors have implications, too, for the air conditioning system. Understanding trade-offs falls to facilities managers.

strategic alignment of facility management with business objectives

One of the hallmarks of facilities management as a profession is its direct role in an organisation’s strategic planning. The built environment is a critical factor in the success of many enterprises, although it has not always been seen in those terms. It is well recognised now that hospitals, for example, need to retain their best medical staff; performing arts centres their performers. The facilities and the way those facilities are managed play a significant role in the purchasing decisions those customers make.

The FM Exemplar Project using Sydney Opera House as a case study has, via the CRC for Construction Innovation, published its findings earlier this year in the aptly named report *FM as a Business Enabler**. The need for alignment of services, performance criteria and supporting information with an organisation’s business goals and objectives was a key finding of the research project. Stephen Ballesty, Rider Hunt Director and CRC-CI project leader, explained further:

The project focused on digital modelling, services procurement and performance benchmarking themes as dimensions of the FM equation, which when integrated, improve FM’s ability to support an organisation’s objectives. In the report, the research outcomes were aligned within the broader context of Sydney Opera House’s total asset management plan in support of their organisation’s business enterprise.

* downloadable at <http://www.constructioninnovation.info/index.php?id=44>

The simplest definition of this strategic role is: the facility manager is there to help the business achieve what it wants to achieve. This means that facilities managers should be defining policies that will support the business objectives. Ballesty sums up facilities management as it "all coming down to performance". He described one way a facilities manager might think about how a facility does or does not support the goals of the enterprise or user group. It is to ask three questions of any asset in any location:

what must it do?

what can it do?

what should it do?

Sustainability, as several interviewees pointed out, is likely to become an objective enterprises will want (or have to) achieve. Sustainability will need to cascade down organisational culture as Occupational Health and Safety has. As Ballesty pointed out:

"Facility Managers are often cast in the role of problem solver, to get a seat at the table you need to have a solution, and to keep having them and adding value. Otherwise FM risks being seen simplistically as a cost to be minimised."

2.4 greening* the built environment

There are two aspects to greening the built environment. One focuses on the effect the facility has on the natural environment: greenhouse gas emissions, waste produced, water and other resources consumed, nearness to public transport, etc. The second concerns the 'greenness' of the indoor environment: air quality, noise, vibration, pollutants, use of natural light, etc – the indoor ecology.

reducing impact on the natural environment

The generally accepted view is that most – meaning 90% – of existing commercial buildings in Australia could operate with a far smaller negative impact on the natural environment than they currently do. The Investa Property Group is among the organisations that have been leaders in demonstrating the extent to which improvements can be made. It measured levels in 2002-2003 and aimed to reduce within three years: (i) electricity by 15%; (ii) water by 25%; and (iii) waste to landfill by 50%. They achieved the electricity target in 2005; exceeded the water reduction target in 2005 (28.5% reduction); and achieved the waste recovery target in 2006 – altogether saving 30,000 tonnes of aggregate emissions. Chris Callanan, Senior Facilities Manager at Investa explains:

Ten, twenty years ago buildings were built to deliver a certain level of comfort regardless of energy consumption. But you can tune a building to run so much better: they all have digital controls although you've got to understand what you're doing. Sometimes it is quite simple – not heating and cooling at the same time. The number of times people shift offices and put the photocopier or urn under the temperature sensor is legion – effectively telling the sensor to cool the whole space when the only thing that was too hot was directly underneath it! Just removing those conflicts and then monitoring rigorously eliminates an enormous waste of energy. We check the gas, electricity and water in use at any time. Then we can bring in the building maintenance contractor and ask: 'why is it heating here at night?'

* One is loathe to further the strange practice of turning nouns into verbs, but to act 'to green' seems to have become standard usage, and is certainly in common currency among those interviewed.

The early energy saving initiatives provided some of the largest energy savings as the fine tuning process was simple and at minimal cost with benefits in energy reduction providing very short payback periods. The challenge is to acknowledge that the process does not stop with these easy gains and that constant monitoring and refinement will deliver consistent incremental improvements over the life of a building. We believe there is always improvement to be made and will continue to identify areas where changes can deliver a more efficient building.

Jon McCormick, Managing Director Multiplex Facilities Management, makes a similar point

People seem to think that if a building is well designed it will run well. The underlying assumption that buildings will perform as designed is flawed. The buildings are designed and built by architects and engineers but owners and occupiers allow them to be run by the 'ladder and ute' brigade... And the greener buildings get, the more complex they will be and harder to run well. We will need more skilled people with many more skills.

Not all improvements are inexpensive – not all are cutting out Styrofoam cups and using both sides of a sheet of paper or not printing out emails. Installing grey water and black water systems, for example, is not cheap.

A good example of the way costs can escalate comes from the Victorian Arts Centre. From an environmental point of view it makes a lot of sense to replace the hundreds of incandescent ceiling lights in the Centre's extensive lobbies with dimmable fluorescent lights. Makes sense but not only would the light fittings need to be changed, the entire expanse of copper and gold ceiling would have to be redone because the existing holes are the wrong size for the new fittings.

improving the indoor ecology

Indoor ecology is the interaction – the two-way interaction – between the occupants of a building and the building itself. Introducing indoor ecology re-balances sustainability from a focus almost wholly on climate change and the sustainability of the planet's resources to a concern also with the individuals within buildings. The objective in understanding and improving indoor ecology is to protect the health and enhance the productivity of a facility's human occupants.

There was a period when that objective was more or less lost from view. The response to the energy crisis of 1974 was to build 'tight' buildings – to seal them up to save energy. By the 1980s it was recognised that the lack of ventilation, constantly recycling the same air through the building, was making people sick. The pendulum has swung and there is a growing research base on how to design and operate buildings not only to ensure the occupants have their health but also to enhance their performance within the space. To this end two complementary approaches are being used:

- (i) obtaining measurements of the parameters which might affect health and productivity – for example the presence and nature of volatiles in the air; variation in temperature or noise levels:

The goal here is to find *quantitative* relationships that would allow one to say 'due to this or that aspect of the physical or toxicological environment, the increase (or decrease) of well-being and productivity is likely to be X%'. I asked Vyt Garnys, who is an expert in this type of work (as MD of CETEC and chair of FMA Australia's Indoor Ecology Special Interest Group), whether it was realistic to think one could pinpoint

causal factors to that degree of accuracy. His answer: “don’t ask whether it is realistic, ask rather if it is worth trying to do because it will sharpen all our thinking if we address issues of productivity and well-being in this very disciplined way”;

- (ii) talking to, and recording, occupants’ perceptions of comfort or discomfort in a particular building, or part of a building:

Garnys argues that facilities managers should stop thinking of complaints as one-offs to be answered and then forgotten. Rather they should be entered onto an ecology log and the person thoroughly questioned about the complaint with an honest view towards gaining a better understanding of how and why the indoor ecology wasn’t working for that person. Trends and patterns should emerge. A number of consultants have developed and tested questionnaires that let occupants assess the way their building impinges on their productivity and well-being. In one case at least this kind of questionnaire has been used effectively in a before-and-after assessment of a building re-fit.

Deakin University’s Built Environment Research Group (BERG) has a research focus on human well being and the built environment. One project MABEL is undertaking evaluations of Australian buildings with a view to understanding the relationships between people and facilities (www.mabel.com.au). The CRC for Construction Innovation has recently completed research on the air-conditioning of commercial buildings. They found that many heating, ventilating and air conditioning (HVAC) systems installed in larger buildings have more capacity than is ever required to keep its occupants comfortable. Such “oversized” HVAC systems can have negative effects on the environment, on occupant comfort, as well as on the economic outcomes for the building.

One powerful driver for greening the built environment is the availability of an array of rating tools that evaluate a building’s environmental impact in transparent and consistent ways. There are several of these – including ABGR, Basix, Green Globe 21, Green Star and NABERS in Australia and prominently BREAM in the UK and LEED in the USA – each performing somewhat different functions. The Green Star rating system developed by the Green Building Council of Australia seems to be becoming the common choice locally. However, there is no agreed standard*.

Green Star is actually a suite of tools, each tool designed for a particular building type at a particular stage in its life cycle. There are, for example, Green Star tools for ‘Office Design’, ‘Office as Built’, and ‘Office Interior’. Tools for rating ‘Office Existing Building’ and for ‘Shopping Centre Design’ are currently being piloted. Green Star documents specify in (almost excruciating) detail the criteria and rationale for awarding the points that accumulate into a Green Star rating. If a building achieves fewer than four stars, it is deemed to not be green. Two examples of point allocations from ‘Office as Built’:

- in commissioning a building:
 - one point is awarded where evidence is provided demonstrating a client commitment to a firm 12-month commissioning building tuning period after handover. This requires minimum quarterly

* The Property Council of Australia’s recent publications “The Sustainability Tools Pathway” and “a Guide to Office Building Quality”, while encouraging the adoption of green principles, make no specific endorsement of rating tools.

reviews and a final recommissioning after 12 months. The aim of this credit is to encourage and recognise improved energy efficiency and comfort within the building in all seasons due to adequate commissioning;

- on parking spaces

one point is awarded where it can be demonstrated that 25% of the total parking spaces on the site are sized and labelled for small cars. The aim of this credit is to encourage and recognise building design that supports the use of smaller more fuel efficient vehicles for work commuting.

Green Star is well supported by the Green Building Council of Australia including training in the use of the tools and for assessors.

An immense amount of material aimed at helping people understand and act to green the built environment is available. A few that are particularly useful are listed in the box below.

The Green Building Council of Australia's *Dollars and Sense of Green Buildings 2006* as well as the detailed material on Green Star www.gbcaus.org

A.G. Coombs website in general and in particular Bryon Price's two papers on green age buildings www.agcoombs.com.au/resources/white_papers

Investa website for case studies and sustainability reports www.investa.com.au/sustainability; it also publishes a Green Lease Guide

ecospecifier is an interesting site which provides information about environmentally preferable and healthy products, materials and design processes www.ecospecifier.org

The Commonwealth government's ESD design guide for Australian government buildings which also has case studies and video clips; the material developed in conjunction with the RMIT group Sustainable Built Environments and Centre for Design <http://www.environment.gov.au/settlements/publications/government/esd-design/index.html>

OECD work on sustainable buildings including a report on barriers to improving sustainability policies (which doesn't mention training or skills) http://www.oecd.org/document/28/0,2340,en_2649_34289_37251036_1_1_1_1,00.html

Articles about indoor environment and facility ecology written by cetec <http://www.cetec-foray.com.au/IEQ/IEQ.htm>

The Construction Innovation CRC is in the process of developing a 'Your Building' portal in collaboration with the Australian Greenhouse Office. Due to be launched in July 2007, it is designed to meet the diverse needs of all those in the commercial building industry. It will provide expert information on procurement, design, building and operation by practitioners in each field. check with <http://www.constructioninformation.info>

Australian Government's FM Action Agenda's sustainability working group outputs www.fmactionagenda.org

3. DEVELOPING THE SKILLS REQUIRED IN FACILITIES MANAGEMENT

An ideal skills framework for the facilities management industry could be imagined as a three dimensional climbing frame – almost like a children's playground jungle gym – each bar a skill development program. Now imagine people approaching this FM Skill Scaffold, as the thing might be labelled. They're coming to it from different directions: some from school; some from

university or TAFE; some from their jobs in the building/construction industry; some from office work; some are architects, others lawyers or accountants, contract managers; many already work in the FM field. Since they have different experience and needs they would move onto the scaffold at different points – some higher, some lower; some from behind, some from the side, some in front – in search of particular skills.

That picture would be the ideal. As things stand, however, the frame is fairly bare. There are not that many programs for the climbers to access. Those that are available or under consideration are discussed in this section. Identifying would-be climbers and alerting them to the existence of the frame is an important issue which is reflected in some of the discussion.

It should be noted at the start that there are skill shortages throughout the FM industry:

- at the trades level the shortages are an Australia-wide problem not specific to the FM industry;
- in terms of people with specific FM skills: because there have been few formal programs for acquiring such skills, most people have learned most of their skill on the job. People are 'transitioned' into FM from within their organisation and so supply has kept up with demand because there has been an internal and somewhat compliant labour market to draw on. As the FM industry continues to consolidate its identity and enhance its visibility, there will be increased demand for FM specialists and hence pressure to create more efficient and professional pathways to skill;
- the skills that are (and the emerging ones that will be) required in greening the built environment are scarce both nationally and internationally; this is likely to be a global high-skill labour market.

3.1 FM skill development opportunities for school students

There are currently no programs that would introduce senior secondary school students to the world of facilities management. The Property Operations and Management Training Package (formerly Property Operations Development Sector, PODS) which defines (some) FM competencies might, in principle, be tailored for a VET-in-schools program, but the Training Package itself is recent and not well established within TAFE (see section 3.2).

One example of a school which might be interested in developing a pre-apprenticeship program in facilities management is the Vocational College (also referred to as a Technical Education Centre) for Year 10-12 students set up within the precincts of Holmesglen Institute of TAFE – a TAFE with a distinct entrepreneurial bent. Funded by the Victorian government, the College opened this year with 155 students who had been disenchanted with their previous schools. The idea is to provide a TAFE environment *and* pastoral care. John Thomson, who is Manager Security and Property Services at Holmesglen (and who sits on FMA Australia's Education and Training Committee), is keen to develop a program that would introduce students to basic plumbing, basic electrical and similar building skills within a framework that points them towards facilities management, so they may learn about managing small projects as well as doing building inspections. There is some concern within the Institute as to whether such a course would appeal to 15- to 17-year olds – people in this age bracket currently have no understanding of what FM is.

What about introducing the fundamental ideas inherent in 'managing the built environment' and 'greening the built environment' through interesting materials and activities – for example, students carrying out real building inspections? Norman Jackson, currently Team Leader Building Strategy for Boroondara City Council, who first suggested a building inspection activity and even offered to help devise one, later remembered his time as a teacher and pointed out that schools are inundated with such worthwhile material:

“Every imaginable industry has produced expensive materials. Kits are launched with much fanfare and everyone says 'great', but 13 other kits will arrive at school the same week. Teachers are interested in materials that will help them get through the syllabus or curriculum. If the material doesn't contribute to that – or the teachers don't see it as contributing – it won't be used.”

Nonetheless, Jackson went on to muse about the attractiveness of an inspection exercise and the associated knowledge and discussions that could be fostered, including the interesting and rewarding careers in facilities management.

The Sustainable Schools Initiative may be a promising avenue for developing practical sustainability skills and strong ecological values. The initiative began in New South Wales and very soon afterwards in Victoria where a joint pilot was conducted in 2002-2003. Queensland followed and there is now a version in each state and territory. All receive funding from the Commonwealth Department of Environment and Water resources and are known nationally as AuSSI (Australian Sustainable Schools Initiative) The web site for the Queensland program, known as QESSI (Queensland Environmentally Sustainable Schools Initiative) points out:

QESSI is not another program or product in a market place that is saturated with resources that focus on environmental education for a sustainable future for schools. What QESSI is aiming to do is build the capacity of existing service providers to achieve their goals. QESSI is the integration of existing environmental education for sustainability programs for schools into a holistic process with measurable environmental, economic, social and educational outcomes.

<http://education.qld.gov.au/schools/environment/outdoor/aboutqessi.html>

The Queensland program is outcomes focused and pragmatic as is the South Australian program where students have an opportunity to discuss their findings with their Minister twice a year. South Australia also has a dynamic form of 'succession planning' whereby past students mentor current ones. Syd Smith, who has been involved in a number of these programs, noted that NSW and Victoria have been very successful for over four years in combining their curriculum priorities with their administrative and management initiatives which support sustainable practices.

Whether an explicit link is, can or should be made between Sustainable Schools programs and careers in FM – FM in its broadest sense – is a question that lies ahead. The answer will depend on how motivating and attractive the necessarily arduous pathways to high level 'greening the built environment' – and maintaining it as green – skill development can be made. Trying to direct school leavers (or disengaged school students) towards green work in facilities management will require thorough research. Who should be encouraged down this path? What will they learn? How? For whose benefit?

3.2 FM skill development opportunities in the VET sector

The new Property Operations and Management Training Package contains two qualifications (complete with competency standards and assessment guidelines) that are specifically titled Facility Management Certificates: a Diploma (a Certificate V) and an Advanced Diploma (a Certificate VI). The fact that the Training Package is there and endorsed, however, does not mean that it is being used by Registered Training Organisations (RTOs).

At this time, the only TAFE Institute offering an FM qualification from the Training Package is Gold Coast Institute of TAFE which offers a Certificate IV. It has tailored the program specifically for body corporate management – keenly needed in the real estate environment of southeast Queensland – by selectively choosing FM competencies.

Sydney Institute of TAFE has developed Certificates III and IV in Property (Operations) for TAFE New South Wales but neither has been picked up by any TAFE Institute in the state. The lack of response, according to Bernie Galletti, Manager Property Services Programs at the Sydney Institute (and a member of FMA Australia’s Education and Training Committee) is the perception that there is no demand for FM courses. Galletti believes the basic infrastructure to deliver the competencies is available, including experienced teachers, and that what is required is better marketing and support from the FM industry.

John Thomson at Holmesglen Institute of TAFE would like to see a Facilities Coordinator Certificate III program delivered by TAFE. His dream is for the FM industry to have a Certificate IV followed by a two-year cadetship. He believes cadetships are key to opening the student market as well as providing an incentive to employers. There is certainly an issue in the almost total lack of visibility of FM, as FM, in the VET sector. Even the Construction and Property Services Skills Council, the body charged with responsibility for skills development in the industry fails to list Facilities Manager in their list of 170 careers in the property services field [www.cpsisc.com.au/career/porpropertycareers3]

Two private RTOs deliver targeted Facilities Management training:

UNE Partnerships is an RTO within the University of New England. It offers a Facilities Management Certificate designed for supervisors, or potential supervisors, working within a Facilities Management Department and a Diploma, also designed for people already working in a leadership position in facilities management. The competency-based courses were first written in 2002 for Honeywell by the Arthur Group* and are based on the original FMA Australia competencies. Neither course is accredited within the AQF (Australian Qualifications Framework). The Certificate course makes no mention of sustainability; the Diploma course makes a general statement that it ‘tackles the legal, environmental, business and strategic planning skills required to achieve organisational objectives’.

Both the Certificate and the Diploma are completed by correspondence although UNE Partnerships also delivers in-house FM training for corporate groups. Both courses appear to be popular: some 100 students are currently enrolled in the 12-month programs. The main driver of enrolments is the web (both UNE Partnerships own site and the listing on FMA Australia’s website) and employer/corporate students. Word of

* the Arthur Group is John Arthur and Sandra Scheetz who are the academic directors of the UNE Partnerships FM program

mouth also helps attract students to the program. The cost of the Certificate course is \$2,420; the Diploma \$3,025.

fmedge has taken the bare bones of the Property Operations and Management Training Package and developed learning and assessment tasks and the relevant resources to deliver a Diploma of Property, Asset and Facilities Management. Martin Leitch, Director of fmedge (and a member of both FMA Australia's Education and Training Committee and the industry's Action Agenda Education and Training Working Group) said fmedge's original business plan was to deliver the program as competency-based training modules in one-day workshops in Sydney, Melbourne and Brisbane. They found it impossible, however, to get people wanting to do the same module in the same city on the same day. They are now delivering the program on-line.

The program has been designed for people who are already in the workforce (but not in FM) and has been attracting individuals in supervisory and lower level management positions. The program costs \$5,600. Leitch believes that FM training at the lower Certificate III and IV levels is best left to TAFE Institutes, although he points out fmedge would be willing to sell their Diploma level program – their intellectual property – to any interested TAFE. fmedge runs a similar Diploma program in Singapore.

It is a little surprising that the public VET sector seems to have not grasped the dynamism of FM so apparent to its practitioners. And disappointing, because the foundation for much work in FM comes from the kind of Certificate III and IV courses which are the special province of TAFEs – not only in the trades, but in office administration, contracting, risk management, information technology etc. It suggests Thomson may be right when he says the time is ripe to establish dedicated FM units which could bring together and make visible the possibilities and attractions of a career in FM.

3.3 FM skill development opportunities in the university sector

Three universities have an involvement with FM: Deakin University, Macquarie University and Bond University:

- Deakin is the only Australian university currently offering an undergraduate Facilities Management program badged as FM. The three year course leading to a Bachelor of Facilities Management degree was introduced this year but the course is not actually available for direct entry. Rather, it is an early exit option from the new 5-year combined degree in Infrastructure Logistics (a combination of facilities management and construction management). Craig Langston, who holds the inaugural chair in Construction Management at Deakin, originally wanted a straight 3-year FM degree but the university refused on the grounds that it wouldn't attract school leavers*. No other university was interested either, at least no one responded to the letter sent to every Australian university by FM Action Agenda soliciting Expressions of Interest in such a course.

There are 20 Commonwealth supported (HECS) places for students in the first year of the combined degree; a quota that was easily filled. Thirty students from Construction

* Deakin University has established an FM major in both its Bachelor of Management and Bachelor of Commerce degrees

Management transferred into the second year of the combined degree. Eleven former graduates from Construction Management have come back to do the third year. The degree is available to graduates from a number of disciplines, including business studies. As with the current 11, they would enter directly into what is designated third year in the combined degree and exit with a Bachelor of FM degree nine months later.

As it turns out, having FM as part of a combined degree has real advantages even though, as Langston says, it was Plan B. It means the students get full exposure to the project management units of the construction management degree – project management being an important aspect of much facilities management work. The intention is that students in the final (fifth) year will undertake honours level research in a workplace with their research based on the interests or problems of the host enterprise. The workplace can be in Australia or overseas as modern technologies mean the student can be supervised at any location by Deakin staff. The fact that it is a combined degree meant the ENTER cut-off score was high: 78 where the norm for construction management is lower. Thus far even the students most interested in a facilities management career intend to stay for the full five years of the combined degree.

The program is offered in the School of Architecture and Building and is run at Deakin's Geelong Waterfront campus. Langston would like to see the FM degree available to more students, perhaps through on-line delivery. He believes the work placements envisioned for his fifth year students would help attract school leavers to careers in FM.

- Macquarie University's International College of Management in Manly offers an undergraduate degree in Property Services Management which is included in FMA Australia's list of tertiary education FM courses. It is geared to commercial property management and rests firmly within Business Administration. The 3-year degree focuses on principles of valuation, commercial valuation techniques, land and property law, property development controls, and similar. It does list facilities management as a career option, but Tim Maillet, Regional Recruitment Manager, was insistent that it is not only a facilities management program. Interestingly, students in the second year have a nine-month industry placement. The program was introduced last year. There are 14 second year students and 18 first year students in a mix of HECS and Domestic Fee-Paying places. All but one of the students are school leavers. When asked why the program was located at Manly and not at the main campus in Ryde, Maillet said it was a more professionally-oriented campus, "the students all wear suits".
- Both Bond University and Holmesglen Institute of TAFE are planning to launch undergraduate majors in FM in late 2007 and 2009 respectively.

Quite a number of universities offer Graduate Certificates, Graduate Diplomas and Masters degrees that are badged Facilities Management. FMA Australia maintains a reasonably up-to-date guide on its web site as to what is available [www.fma.com.au]. The listed universities include Curtin University, RMIT, QUT, University of Canberra, University of Melbourne, University of Newcastle, University of NSW, University of South Australia, University of Sydney, and UTS.

There is little consistency as to where these post-graduate courses are located within the university: sometimes the courses are linked to architecture; sometimes to engineering and/or the built environment. In only one case is it linked to a Faculty of Economics and Business

(University of Sydney) although the FM Action Agenda envisions a Bachelor of Business (FM) degree as the basic Facilities Management degree.

Peter Scuderi at the CRC for Construction Innovation made the interesting observation that a consequence of there being such limited university commitment to FM is the difficulty they, and presumably others, face in finding researchers.

3.4 skill development for greening the built environment*

The skills required for a building or building complex to operate in an environmentally sustainable way range from inculcating simple habits (e.g., using the least amount of paper and recycling what is used) to the technical sophistication of tuning the HVAC system to minimise energy consumption (while at the same time ensuring the indoor environment is a healthy and productive one). Across such a range, the avenues for skill development are necessarily diverse.

Maria Atkinson, Head of Global Sustainability for Lend Lease, has been showing Al Gore's film *An Inconvenient Truth* to Lend Lease businesses around the world:

"My role is to change the culture. There is no kit guaranteed to deliver that. The film is one way to start people on a change journey. But we know that cultural change is costly and painful. Sustainability is interpreted as sacrifice. Playing on the fringes of sustainability, however, isn't acceptable. This is not about a few short-lived initiatives. I insist: 'you have to change what you think and what you do'."

She recognises that you also have to give people access to good learning and opportunities to change.

The technical end of the skill spectrum will require equally profound change:

Traditional building services maintenance has been all about system reliability and performance. Maintenance practices that are driven by the need to maintain energy efficiency are different ... Energy efficient maintenance is founded on an understanding of how air conditioning systems consume energy and where the risks to energy efficiency lie. This level of sophistication is not common in the building services maintenance industry and will take some time to develop. [Price, undated]

FMA Australia is tackling skill development for greening the built environment in several ways.

- The Special Interest Group on Indoor Ecology, chaired by Vyt Garnys, is considering how to up-skill people who run buildings, reinforcing what they know but putting it in a new context. A web portal is being trialled to serve as an information hub about the developing field of indoor ecology;
- The Building Services Special Interest Group also aims to help people operate their facilities more sustainably. To that end they organise expert presentations and site visits. It is worth noting that the expert session on water conservation in buildings attracted

* It should be noted that there was no systematic search for programs that developed skills for greening the built environment. The programs described in this section are ones suggested by interviewees. Most likely every university and TAFE teaches something about the sustainability of the built environment somewhere (for example, Monash's extra-curricular Green Steps program), and there may well be organisations beyond those mentioned here with some educational remit about the sustainability of the built environment.

110 people whereas the audience for most of their technical presentations is in the range 35 to 50;

- One focus area of the FM Action Agenda is improving the sustainability of the built environment and one potential project will be to support the creation of practical guidelines for facilities managers.
- As FMA Australia's Chairman in 2006, Stephen Ballesty contributed to the Department of the Environment & Heritage's "Water Efficiency Guide" providing a 'how to' guide with benchmarks for water consumption in office and public buildings.
- FMA Australia, in collaboration with fmedge, Australian Institute of Refrigeration, Air Conditioning and Heating (AIRAH), and Swinburne University's National Centre for Sustainability, have been commissioned to develop and deliver a pilot program on energy efficiency training. The project comes under the National Framework for Energy Efficiency (www.nfee.gov.au) being led in this instance by Sustainability Victoria. The program will be designed for two AQF certification levels: a Certificate IV and a Graduate Certificate. The intention is to combine face-to-face and on-line delivery. FMA Australia expects that at the end of the 13-month pilot project it will continue to deliver the certificate training with fmedge and possibly others. Aspects of the program will be incorporated in a new 'environmental performance' competency within FMA Australia's own (up-dated) accreditation system.

The Green Building Council Australia (GBCA) does a significant amount of training for its Green Star rating system. Current offerings are:

- Green Star Accredited Professional course: this one-day course provides participants with an understanding of the Green Star rating system and guidance on applying the Green Star rating tools. The course is run fortnightly, moving among capital cities. It is much in demand, often booked out months in advance. The cost is \$395 for GBCA members and \$595 for non-members;
- Green Star Submission Workshop: these workshops help participants prepare their documentation for being assessed for a Green Star rating. The intention is to make the assessment process smooth, cost-effective and rewarding;
- Green Star Office Interiors Advanced: this half-day course is for Green Star Accredited professionals who wish to deepen their understanding of the tools. It provides a forum for participants to discuss pertinent problems with an expert panel and with colleagues;
- GBCA also run in-house training for the staff of member organisations. There is escalating demand for this training: where they used to do one a month on average, they are booked to do four in May;
- an emerging leaders program is under development which should be finalised and launched mid-2007.

The Green Building Council Australia is interested in extending its reach so that students in relevant disciplines at TAFE and university would develop, at the minimum, a thorough understanding of sustainable building pathways and, best, be able to apply the Green Star rating system. By relevant disciplines they mean almost everyone who has anything to do with the built environment.

There are still relatively few people who have the skill to fine-tune a building so that it operates at the level of efficiency and sustainability it was designed and built to achieve. Jon McCormick from Multiplex Facilities Management said that even his staff hasn't the requisite skills yet. Multiplex is putting a number of operations managers through GBCA courses. The plan is that once they are up to speed, they will tutor their senior facilities managers who, in turn, will tutor facilities managers. In turn, facilities managers will tutor or mentor facilities supervisors who are still on the tools.

The Property Council of Australia runs a one-day course Sustainability and Property Assets which introduces participants to a number of rating systems and such topics as the economics of sustainability and green leases. The Construction Innovation CRC is interested in partnering with organisations to provide education and training; it has been involved with the Sydney Opera House Exemplar Project (part of the Action Agenda work).

3.5 an over-arching framework

One can see from the preceding description of the opportunities available in schools, TAFEs, universities and through organisations dedicated to the sustainability of the built environment that the jungle gym image we began with – the FM Skill Scaffold – does not at this time provide strong sure footholds for the variety of individuals who might well become skilled and effective facility operators and managers. On the other hand, there is a distinct need for a coherent over-arching framework that would clearly show the scope of FM and pathways through to the different fields of work in it.

There are two issues involved in constructing such an over-arching framework. The first concerns the development of 'traditional' facility management skills; the second the development of skills to green the built environment.

The skill framework for 'traditional' facility management: Several years ago FMA Australia took on the task of developing an accreditation system. It defined three levels of FM competencies. The focus was on such tasks as procurement, project management, risk management, financial performance and facility performance. A signal of just how recently sustainability has become prominent is to note that FMA Australia's current competency standards for accreditation do not mention the words sustainability or sustainable. Revising and strengthening this core FM framework is a task being undertaken collaboratively by FMA Australia's Education and Training Committee and the FM Action Agenda Education and Training Working Group:

- The FMA Australia Committee is revising the accreditation system. Its three levels – an FM practitioner; an FM Manager; and an FM leader – were originally developed without reference to the Australian Qualifications Framework. The Committee is working to align FMA Australia competencies with the AQF. A competency on environmental performance will be included in the up-dated accreditation system.

The alignment of AFM1 (Accredited Facility Manager level 1) is a matter of some contention within the industry. One view is that it should be equivalent to a university undergraduate degree – a view held by those who want to emphasise that FM is a profession and as such even the minimal level of accreditation requires academic study. Others argue the FMA Australia accreditation framework should contain a broad entry level category to recognise the multi-faceted nature of facilities management so that, for

example, a plumber or service desk manager – i.e., credible individuals already contributing to the FM function – can be formally recognised. One suggested scheme is that AFM1 be delivered by TAFE but include a two-year cadetship:

“It would be a professional qualification. It is critical that competencies be demonstrated in the workplace and cadetships would open up the market to students and provide incentives to employers. It would get people started and accredited.”

- The FM Action Agenda Working Group is engaging directly with the tertiary education sectors (VET and universities) to encourage greater provision of FM education and training and to promote that provision. To that end, for example, it is working with the recently formed Construction and Property Services Industry Skills Council (CPSISC) which develops and manages Training Packages for the industry. The CPSISC will test with industry the updated set of FMA Australia accreditation competencies. The Working Group has overseen the articulation of fmedge’s Diploma of Property, Asset and Facilities Management with Deakin University’s undergraduate FM degree.

The Working Group believes three components are required if there is to be a significant increase in the provision of education and training:

1. a well documented profile of the kind of person the industry is seeking, including a skills audit that identifies the type of skills required and their availability in the community;
2. a guaranteed and sufficient supply of students over the long term;
3. industry commitment so it will help in developing appropriate teaching materials and readily accept and employ graduates.

Martin Leitch, Director fmedge and a member of the Working Group (as well as of the Committee) describes this as building a three-cornered stool: FMA Australia has a role; the education and training sectors have a role; industry has a role. He is especially interested in the latter, pointing out that for an education/training framework to be effective collaboration must include the workplace. The Working Group is planning to take a matrix of competencies related to one work area – possibly risk management – and talk to two or three significant employers asking what the learning needs in their organisations are. The aim is to create a model that pulls together VET, university and different ways of learning in the workplace.

The skill framework for green facility management: well, there is no framework. The various tactics for becoming skilled in aspects of greening the built environment described above (section 3.4), as valuable as they are, are more like little packets of skills falling around the FM jungle gym. The ideal would be to have something like rain falling on the frame, greening it. There is a common shared among many of those interviewed in bringing about such an elaborated framework.

In summary, there is intelligent and committed work being done towards an over-arching framework. It is clearly important that a well researched and tested skill framework be developed (and allowed to evolve) for the facilities management industry – for a green FM industry – to grow and prosper. I would, however, add a personal observation.

There is something about facilities management, as I have come to understand it, that is richer than a framework implies. What I've noticed (and admired) is the way people in facilities management grow their own intelligence *and* the way they share what they have learned amongst themselves:

- the various working groups with their site visits, special seminars and regular meetings are evidence of this. On these occasions people ask one another for advice and experience is freely shared;
- there is the learning that occurs when Green Star assessors or FMA Australia accreditation assessors discuss amongst themselves the candidates' suitability for accreditation;
- there are the conferences: FMA Australia's Ideaction is a major event now in its 18th year, but there was the 2nd Annual International Sport Facility Management Program in Melbourne which just concluded (partly sponsored by Melbourne School of Sport and Recreation Management);
- there is the plethora of material people are putting on the web – to an extent sharing what is by rights their own intellectual property.

I would suggest that 'developing the skills required in facilities management' – the overall subject of this section – is an arena where innovative and imaginative approaches to learning are warranted, if not required. Skill Challenges and mentoring, for example, are already effective mechanisms for developing skill that operate independently of any formal accreditation framework. It seems to me the field is too vibrant and challenging to be confined to tightly defined programs – although such programs are, of course, essential bedrock.

4. A CONCLUDING COMMENT

The operation and management of facilities is a dynamic and growing field which offers interesting challenges to its workforce and demands, in return, robust skills which need continually to be upgraded. This is true of work in green (and in greening) built environments but it applies to the running of any large facility: it is all stimulating and rewarding work. In attracting good people into the field two interrelated issues stand out:

- Facilities management is not well known as an arena of employment. It does need to be better recognised in the broader community, not least to attract potential workers. Promoting the industry will require a very well constructed and long-term communication strategy – starting with clear objectives and testing the language used. One dimension of the strategy would be to enlist people currently working in the field to raise their profile within their own organisations. Facility managers/operators tend to be called out when things need fixing and stay hidden from view the rest of the time. A second dimension would be for the technical specialists (often contractors) who operate and maintain the different systems – for example, air conditioning, lighting, security, etc – to see themselves as part of the bigger drama of ensuring the facility works well for the people in it, and to take pride in that larger purpose.
- Skill development programs are limited. If the ideal is a skill development framework – a 'jungle gym' of opportunities for people, young or old, to latch onto to acquire skills for

managing and greening the built environment, then we are currently looking at a bare patch of ground with a pile of rods at the side. Many of the rods – skill development programs – are strong. They would be good rungs in the jungle gym. But there are not enough to build a sturdy edifice. The current rods:

- a few are labelled 'facilities management' – mostly post-graduate degrees and certificates delivered by universities although one is a new undergraduate program and two are diplomas developed by private RTOs delivered on-line. None of these is focused on sustainability although there is likely to be some material about sustainability as it is becoming a recognised part of FM;
- many rods carry trades labels (e.g., electricity, air-conditioning, plumbing, IT and allied skills such as security). The problem is that the trades are applicable in many industries and there has been no concerted effort to link them conceptually to facilities management;
- a number of rods bear a specific 'sustainability' label. Some have been placed there by organisations whose mission is, at least in part, to ensure the built environment is ecologically sustainable. There are also units and courses sprinkled across TAFEs and universities that address sustainability;
- schools have contributed a few interesting rods, not so much through formal curricula as through well-defined (and supported) Sustainable Schools programs. Exciting the interest and influencing the career choices of secondary school students to acquire the skills that will ensure a sustainable built environment is likely to *not* turn on formal curricula but on students' participation in long-term interactive projects, possibly with students located elsewhere on the globe, and including simulations. The Centre for Environmental Education* project facilitating the sharing between Australian and Indian schools of strategies to deal with local sustainability issues is one promising development which may lead to further successful outcomes.

The lack of profile and the limited skill development opportunities (particularly in introducing people to the field) are serious, and related, issues. But it should also be emphasised that means for addressing them are already apparent, and more will doubtless develop. First, the importance of facilities management in building a more sustainable world should prove a significant drawcard. The remarkable recent turn around to a widespread acceptance that sustainability is a critical matter for all of us presents an opportunity – a 'hook' – that can be used effectively. Second, it should be clear from the range of people who provided the information synthesised in this report that there is no dearth of organisations and individuals with expertise and commitment who could (and would like to) be brought together to strengthen the field of facilities management and its contribution to a more productive and sustainable built environment.

* the Centre is an initiative of the Commonwealth Department of the Environment and Water Resources

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Appendix: individuals consulted

Paul Akhurst, Director Facilities, Sydney Opera House

Maria Atkinson, Head of Global Sustainability, Lend Lease

Virginia Austin, consultant

Steve Ballesty, Director, Rider Hunt and former chair of FMA

Helen Bergstrom, National Facilities Manager, Marsh

Chris Callanan, Senior Facilities Manager, Investa Property Group

Leanne Cooper, Program Administrator Facilities Management, UNE Partnerships

Bernie Galletti, Manager- Property Services Programs, Sydney Institute of TAFE

Vyt Garnys, Managing Director CETEC

Kate Hudson, Project Manager, APP Corporation

Norman Jackson, Team Leader Building Strategy, Boroondara City Council

Tim James, Regional Director, Hays Recruitment

Peter Kavan, Facilities Management Consultant (facilitechture)

Elena Kosheleva, Technical Manager, Green Building Council Australia (and colleagues Emma Piper and Kathy Willoughby)

Craig Langston, Prof Construction Management, Deakin University

Martin Leitch, Director, FMEdge

Jenny Loughnan, Assistant Business Manager, Facilities, Sydney Opera House

Tim Maillet, Regional Recruitment Manager, International College of Management (Macquarie University)

Richard Mayes, Head of Facilities Management Department, Reserve Bank of Australia

Jon McCormick, Managing Director, Multiplex Facilities Management

Peter Mullen, Program manager Real Estate, Facilities and Government, UNE Partnerships

Peter Murphy, General Manager – Facilities, State Sport Centres Trust

Campbell Pfeiffer, Manager Facilities Operations, The Arts Centre

Bryon Price, Business Development Manager, A. G. Coombs Group

Jim Sinclair, Manager Facilities & Security, State Library of New South Wales

Kirsten Smith, Director, Change Angels

Syd Smith, retired from Department of Education and Training NSW; now part time consultant in Education for Sustainability

John Thomson, Manager Property and Security Services, Holmesglen Institute of TAFE