

Improving Employees' Work-Life Balance in the Construction Industry: Project Alliance Case Study

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Abstract: Work-life conflict has a damaging effect on job satisfaction, organizational commitment, productivity turnover, and absenteeism. On an individual level, work-life conflict is associated with employee burnout, mental health issues, substance abuse, and diminished family functioning. Thus, work-life balance is an important issue to the construction industry, in terms of both organizational effectiveness and occupational health. Long and inflexible work hours are the most consistent predictor of work-life conflict among construction employees, particularly those working on-site or in a project office. There is considerable resistance to the adoption of new ways of scheduling work within the industry. This paper describes the post hoc evaluation of a compressed work week (reducing the length of the working week, but increasing the length of the working day) in a case study project alliance in Queensland, Australia. Quantitative and qualitative data are presented to demonstrate the beneficial impact of the initiative on employees' work-life balance. The evaluation provides prima facie evidence that alternative work schedules can improve construction employees' work-life balance, creating benefits for construction employees and organizations. The paper concludes that project alliances provide an ideal environment in which work-life balance initiatives can help to create high-performance work systems in the construction sector.

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Introduction

The Australian construction industry is characterized by traditional work patterns. There is a strong culture of long hours and weekend work, especially among site-based employees. A survey of construction industry employees revealed that the average number of hours worked each week was 62.5 among site-based project staff, 56.1 among office-based project staff, and 49.0 among head or regional office staff. Project staff were reported to suffer from significantly higher levels of work-family conflict and burnout than their head or regional office-based counterparts (Lingard and Francis 2004).

The traditional work patterns prevalent in the construction in-

dustry are based upon gendered assumptions about the nature of work and the ever-availability of employees (Dainty and Lingard 2006). Work cultures that equate long hours spent at work with employee commitment assume a division of labor in which men's time is devoted to work, whereas women's time is devoted to managing the home and family. This division, which frees employees to be available to respond to organizational demands at all times, is no longer applicable to the workforce of the 21st Century (Lawrence and Corwin 2003).

Historically, the gendered nature of the construction industry has led to assumptions that construction is "men's work" and discourages the entry of women. Evidence suggests that those women who do enter the industry often depart from it prematurely. This departure is often attributed to employment conditions (Byrne et al. 2005); in particular, the industry's failure to accommodate the family needs of employees has reportedly acted as a barrier to women's entry into the construction industry (Fielden et al. 2000). Currently only 7.9% of all managers and professionals in the Australian construction industry are female (ABS 2003). A recent survey by the Association of Professional Engineers, Scientists, and Managers revealed that many female construction industry professionals are forced to choose between career and family, with many leaving their professions in order to bear children (*The Age* 2004).

The industry's rigid adherence to long hours and inflexible work schedules is also believed to hinder its ability to attract and retain talented employees. The Australian construction industry is facing a critical shortage of skilled workers. It is estimated that, if the construction industry is to replace its retiring workers and meet growth demands, between 40,000 and 50,000 new skilled workers will be needed in the next 5 years (*The Australian* 2005).

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The industry's failure to respond to employees' work-life balance expectations threatens to substantially reduce the industry's long-term performance and competitiveness.

High-Performance Work Systems

There is a growing realization that an organization's human resources are a primary source of competitive advantage because, unlike capital, technology, and other infrastructure, workforce capability cannot easily be imitated by other organizations. Management theorists argue that employees are capable of performing at high levels when motivated to do so (Pfeffer 1998). Transformed workplaces in which decision-making power is devolved, information flows are increased, and employees strongly identify with the organization's goals have been called "high-performance" work systems.

These work systems are believed to arise as a result of a number of human resources practices that enable organizations to recruit, develop, motivate, and retain talented employees (Way 2002; Wood and Wall 2002). High-performance work systems are believed to develop when employees are treated with respect, enhancing commitment to the organization and increasing trust in management. Higher levels of commitment and trust in turn lead to improved individual (and thereby organizational) performance (Wheatley 1997).

Some theorists use social exchange theory to explain the reciprocal relationship between human resource practices and performance (Whitener 2001). The theory holds that, when employees perceive that the organization treats them well, they respond with attitudes and behaviors that support the attainment of the organization's objectives. Empirical research supports the relationship between high-performance work systems and individual and organizational performance in the form of lower turnover, higher productivity, and corporate financial performance (Patterson et al. 2004; Ichniowski et al. 1997; Huselid 1995). More recently, high-performance work systems have been linked to improved occupational health and safety performance (Zacharatos et al. 2005).

There is some debate about the exact combination of human resource practices that make up high-performance work systems, with some suggesting that no single universally applicable combination exists. One category of human resource practice that has not been included in most models of high-performance work systems is work-life balance practices. This paper explores the extent to which work-life balance interventions should be considered a component of high-performance work systems in the context of the Australian construction industry

Work-Life Balance Practices

High quality work is a feature of high-performance work systems. Factors influencing the quality of work include the extent to which employees enjoy job decision latitude (Karasek and Theorell 1990) and autonomy (Parker and Wall 1998). Decision-latitude and autonomy are consistently associated with positive work attitudes, psychological well-being, and employee performance. Workload is also relevant to job role quality and there is a strong correlation between employees' perceptions of their qualitative and quantitative workload and strain outcomes, such as burnout. The quality of work is also influenced by management practices that increase employees' belief that managers are supportive of employees. Providing employees with greater control and flexibility over the way that they perform their work, ensuring

that workloads are reasonable, and providing a supportive work environment are common features of organizational work-life balance initiatives. Thus it seems plausible that, to the extent that they enhance the quality of employees' work experience, work-life balance interventions will contribute to the development of high-performance work systems.

Research indicates that the introduction of work-life balance initiatives alleviates the conflict employees experience between work and personal life (Warren and Johnson 1995; VanRijswijk et al. 2004) and facilitates a better balance between employees' work and personal lives (Tausig and Fenwick 2001; Madsen 2003). Work-life balance initiatives are also reported to: improve organizations' competitiveness by increasing their ability to attract employees (Casper and Buffardi 2004); induce employees to exercise discretionary effort in performing their work (Konrad and Mangel 2001); and help employees to be more productive (Eaton 2003). Further, Arthur (2003) reports a positive relationship between the announcement of organizational work-life balance initiatives and shareholder returns, indicating that investors view family-friendly firms more favorably. Grover and Crooker (1995) found that employees in companies with organizational work-life balance benefits had higher levels of organizational commitment to the organization and expressed lower turnover intentions, regardless of whether the employee individually benefited from the policy. They postulate that work-life balance benefits have a positive influence on employees' attachment to the organization because they signify corporate concern for employees and their families.

Francis (2003) has reported a link between an organization's commitment to work-life balance initiatives and the employee's commitment to the organization. This study of civil engineers reported higher commitment, job satisfaction, and lower turnover intention when the employees' perceived their organization to be supportive of work-life balance initiatives. These results provide evidence that work-life balance initiatives are linked to organizational performance in the Australian construction industry.

Research Aims and Objectives

This paper explores the question of whether human resource practices implemented to support employees' work-life balance yield benefits for individuals and organizations. In particular, the paper evaluates the effect of the introduction of a compressed work week in a prominent case study construction project; the upgrade of an existing dam in Queensland, Australia. The impact of the compressed work week upon project-based employees' well-being, satisfaction, and work-life balance was evaluated. The performance of the construction project using the traditional metrics of time and cost was also subject to post hoc evaluation.

In addition, employees' perceptions about the influence of the method of project delivery in shaping employees' work-life balance experiences were also explored. Semi-structured interviews with project participants revealed that the project delivery strategy (a project alliance) was perceived to be a key factor in the introduction of the compressed work week. Participants' perceptions of the impact of the project delivery method on employees' work-life balance were explored.

Case Study Project

Project Delivery Strategy

The case study construction project was delivered by means of a project alliance. Project alliancing is described as “A project delivery strategy where sponsor and commercial participants’ objectives are aligned to:

- Maximize performance;
- Proactively manage risk;
- Reduce cost; and
- Achieve outstanding results in sponsor key objectives.

(Hutchinson and Gallagher 2003, p.8).

The core principle of project alliancing is the achievement of positive outcomes for all alliance members through shared commitment to common project goals (Halman and Braks 1999; Walker et al. 2002). One defining feature of project alliancing is that participants are selected on the basis of their capability, approaches, and systems as well as their commitment, chemistry, and the likelihood of their delivering outstanding results (Hutchinson and Gallagher 2003).

Unlike traditional selection processes, in project alliancing participants are selected *before* a price is considered. Typically, project alliance objectives extend beyond the traditional emphasis on price, to include the ability to innovate and manage relationships within and between alliance participants.

Once a consortium of alliance participants has been selected, these participants (one of which is the project sponsor) collaboratively agree on a target cost for the project (turn out cost), develop the design, and establish arrangements for sharing the risks and rewards arising as a result of the project. Typically, alliance participants’ corporate profit and overhead is placed “at risk.” In the first phase of the project, a turn out cost (TOC) for the project is set. A margin comprising the alliance participants’ overheads and profit is added to this TOC. In the delivery phase of the project, if costs exceed the TOC, commercial participants’ margin is reduced to a preagreed formula. This arrangement is designed to ensure that project cost targets are met but that commercial participants cannot suffer losses greater than their corporate profit and overhead in the project. A mechanism is then developed by which any cost savings are shared between the alliance participants. This reward mechanism (sometimes called “gainsharing”) is designed to encourage innovation and maximize collaboration between the alliance participants.

The alliancing concept seeks to overcome the adversarial relationships that have long existed within the construction industry (Kumaraswamy et al. 2005; Hobbs and Anderson 2001). Alliancing is based upon open-book accounting and disputes over contract variations are reduced because all of the alliance participants are involved in defining the project scope and agreeing on appropriate risk and reward allocation.

According to Walker et al. (2002), there is an important difference between project alliancing and partnering. In partnering, project goals are jointly agreed and dispute resolution procedures are established in an attempt to minimize litigation but participating firms remain independent entities and it is therefore possible for one organization to gain while another suffers in the same project. In contrast, alliance participants form a cohesive entity which jointly shares the risks and rewards arising during and as a result of the project. As such, poor performance results in penalty to all alliance participants and, conversely, rewards for excellent performance are shared between the participants. Put simply, “A fundamental design principle of a project alliance commercial

framework is that if one participant wins, all win; or if one loses, all lose.” (Hutchinson and Gallagher 2003, p.18).

Alliancing has become a popular delivery strategy in the Australian construction industry, particularly in the case of major public sector infrastructure projects. For example, the National Museum of Australia was constructed using the project alliancing delivery strategy. The Museum project was subject to extensive empirical investigation and reported to have achieved exceptionally high levels of collaboration between participants. Hauck et al. (2004) report that the communication and cooperation between alliance participants involved in the design and construction of the National Museum of Australia enabled complex technical and managerial problems to be resolved in the best interests of the project, as participants subjugated their individual company interests in favor of what was best for project.

Scope of Construction Work

The case study construction project involved upgrading the existing Wivenhoe Dam in Queensland, Australia, to ensure the dam is able to safely manage extreme rainfall events and “any conceivable flood” in the future. The existing dam was constructed approximately 20 years ago. It comprises a 2.3 km long earth and rock embankment, with a concrete spillway section. Five radial gates, measuring 12 m wide and 16.5 m high are installed on this spillway section. In response to increased rainfall forecasts, the project sponsor, SEQ Water, decided to undertake a comprehensive upgrade of the dam.

To achieve this, SEQ Water formed a project alliance with four other organizations, including specialist consultants and a construction contractor. In the early stages of the project, the Wivenhoe Alliance team carried out a number of investigations to ensure the best possible outcome for the dam and surrounding areas. These studies included a review of various design options, hydrological studies, construction techniques, geotechnical conditions, environmental issues, and community feedback. Following completion of these reviews, a design for the upgrade was developed and a target project was cost agreed.

Construction of the first stage of the upgrade commenced in April 2004. The major tasks involved in the project were building an additional spillway for the dam and strengthening the existing concrete spillway by undertaking posttensioning works (McDowall 2005). The Wivenhoe Alliance’s Project Manager reports that over 425,000 m² of material were excavated for the new spillway. The project also entailed the construction of a five-span traffic bridge and placement of embankment materials within the additional spillway structure (McDowall 2005).

Research Methods

Research Design

The research project commenced after the compressed work week had already been implemented at the Wivenhoe Alliance site. Consequently, the evaluation of this intervention is a post hoc evaluation because data could not be collected before its introduction. This represents a methodological weakness and threat to the internal validity of the evaluation. In order to overcome this problem, a control group of non-Wivenhoe employees of one of the alliance participants was also interviewed to provide a baseline comparison of work-life balance. These individuals had not participated in the compressed work week.

Intervention

The compressed work week, which involved reducing the length of the working week, but increasing the length of the working day, was introduced part-way through the construction phase of the Wivenhoe Dam project. At the commencement of the construction project, the site was operating on (approximately) a 58 h week, spread over 6 days. This comprised five 10-h days (Monday to Friday) plus an 8-h day on Saturday. Shortly before data collection commenced in March 2005, the site moved to a 5-day week, with working hours extended to 11.5 h per day on week days. Weekend work was no longer required. By May 2005, the site was operating on winter hours, reducing work hours further to 10.5 h per day.

Questionnaire Survey

Questionnaires were administered to employees at the Wivenhoe site in June 2005. The questionnaires were designed with the objective of evaluating employees' reactions to the move from a 6- to a 5-day week. Confidentiality and anonymity of responses were assured. Opportunistic sampling was utilized. Thus, all site staff present on the day the researcher visited the site to distribute questionnaires were given the chance to participate in the survey.

Respondents were asked to state their preference for the compressed work week on a 7-point scale ranging from "1" ("very strongly prefer the 5-day week") to "7" ("very strongly prefer the 6-day week"). Respondents were also asked to indicate the extent to which they believed their work-life balance had changed since the introduction of the compressed week. Change was rated on a seven point scale ranging from "1" ("greatly worsened") to "7" ("greatly improved").

Respondents' well-being, satisfaction with work-life balance, and perceptions of work-life conflict were also measured. Shortened versions of previously used scales were utilized at the request of the industry partner organization in order to minimize the length of the questionnaire.

Well-being was assessed by four items taken from Goldberg's General Health Questionnaire (Goldberg 1972). Item wording was taken from a version of the GHQ-12 used by Warr et al. (2004). Items were chosen to represent the content areas of the full scale (i.e., affective, cognitive, behavioral, and physical manifestations of well-being). Respondents were required to evaluate their well-being over the four weeks prior to completing the questionnaire. Hence, an example item is, "How much time during the past four weeks have you had a lot of energy?" Items were rated on a frequency scale ranging from "1" ("none of the time") to "7" ("all of the time"). The Cronbach's alpha coefficients for the abridged four-item well-being scale were 0.73 for the salaried employee sample and 0.67 for the wage employee sample.

Satisfaction with work-life balance was assessed by three global items written specifically for the study. Participants were required to rate "How satisfied are you with your work life?" "How satisfied are you with your nonwork life?" and "How satisfied are you with the balance between your work and nonwork life?" Each item was rated on a scale ranging from "1" ("very dissatisfied") to "7" ("very satisfied"). Cronbach alpha coefficients for the work-life balance satisfaction scale were 0.83 and 0.85 for the salaried and wages employee samples, respectively.

Work-life conflict was assessed using ten items drawn from the work of Netemeyer et al. (1996). This scale measured both work interference with family life and family interference with work. Respondents were provided with ten statements about their

experiences at work and outside of work and asked to indicate the extent to which they agreed or disagreed with them. The items were scored on an agreement scale ranging from "1" ("strongly disagree") to "7" ("strongly agree"). Example statements were, "The demands of my work interfere with my home and family life" and, "Things I want to do at work don't get done because of the demands at home." Cronbach's alpha coefficients for the work interference with family scale were 0.82 and 0.80 for the salaried and wages employee samples, respectively. Cronbach's alpha coefficients for the family interference with work scale were 0.80 and 0.95 for the salaried and wage employee samples, respectively.

Finally, qualitative data were obtained in the final section of the survey, with respondents asked to provide "Any further comments about work-life balance issues at the Alliance."

Semistructured Interviews

In addition to the questionnaire survey face-to-face, semistructured interviews were conducted with individual employees of the Wivenhoe Alliance. Interviews were recorded and transcribed and subject to thematic content analysis. Each interview lasted approximately 25 min. A number of topics relating to work-life balance was explored during the interviews. However, for the purpose of this paper, only data pertaining to the impact of the compressed work week and the project alliance delivery strategy will be presented. Purposive sampling was utilized to identify suitable employees for interviews at the Wivenhoe site, with the assistance of the site Human Resources Manager. Employees were invited to participate on the basis of their seniority and/or function, to ensure adequate representation of all levels of employee at the site.

In total, 19 employees at the Wivenhoe site were interviewed. A control group comprising 6 employees was also interviewed. Members of the control group were employees of one of the alliance participants (but not part of the Wivenhoe project alliance). Three of the control group employees were employed at the organization's head office and three were employed at other project sites.

Results

Survey Data

A total of 42 Wivenhoe Alliance employees completed the questionnaire survey. Of these, 23 were wages employees and 19 were salaried employees. Wages employees are largely "blue collar" workers who are paid on a weekly basis. Their wages are based on a daily rate plus overtime payments for work performed over and above the standard work day. Salaried employees are mainly professional, managerial, or supervisory personnel who are paid a monthly salary, which does not vary according to the number of days worked or length of the working day. A distinction is made between these groups of employees because alternative work schedules potentially have an impact on wages but do not affect the income of salaried employees.

The survey results revealed that Wivenhoe Alliance employees' well-being and satisfaction with work-life balance were generally high. On a 7-point scale, with "7" representing the highest level of well-being and "1" representing the lowest level of well-being, Wivenhoe salaried employees' mean well-being rating was 5.44 (SD=0.74) and wages employees' mean well-being rating

Table 1. Employees' Mean Satisfaction Scores for Work Life, Nonwork Life, and Work-Life Balance

Satisfaction with . . .	Wages	Salaried
Work life	5.77 (SD=1.31)	5.38 (SD=0.92)
Nonwork life	6.41 (SD=1.01)	6.06 (SD 1.11)
Work-life balance	5.86 (SD=1.28)	5.00 (SD=1.57)

was 5.49 (SD=1.12). The mean satisfaction scores for work, nonwork life, and work-life balance reported by salaried and wages employees at the Wivenhoe site are presented in Table 1. These scores are all above the midway point (4), indicating that both wages and salaried employees at the Wivenhoe site are moderately satisfied with their work and nonwork lives and work-life balance.

Employees' perceptions of work-life conflict (i.e., the incidence of work interfering with nonwork activities or vice versa) were also favorable, although the mean score for work interference with family life was just above the midpoint among salaried employees, indicating moderate work-to-life conflict in this group of employees. On a 7-point scale (where "1" indicated "low work-life conflict" and "7" indicated "high work-life conflict") wages employees' mean work interference with family score was 3.24 (SD=1.24) and mean family interference with work score was 2.45 (SD=1.49). In comparison, salaried employees' mean work interference with family score was 4.11 (SD=1.38) and mean family interference with work score was 2.22 (SD=1.02).

The Wivenhoe survey respondents rated their preferences for the compressed work week on a 7-point scale, where "1"="very strongly prefer 5-day week" and "7"="very strongly prefer 6-day week." The mean score was 1.79 (SD=1.55), indicating a strong collective preference for the 5-day week. The numbers of workers for each response option are indicated in Table 2. Table 2 shows that the majority of both wages and salaried employees expressed a preference for the 5-day week. However, a small number of wages staff indicated that they either had no preference or preferred to work a 6-day week.

The Wivenhoe employees were also asked to indicate the extent to which they believed their work-life balance had changed since the introduction of the compressed week. The change was rated on a seven point scale (from "1"="greatly worsened" to "7"="greatly improved"). The average rating for salaried employees was 5.94 (SD=1.39) and for wages employees was 5.87

(SD=1.32) indicating that, overall, most employees felt their work-life balance had moderately improved since the introduction of the compressed work week.

At the end of the questionnaire, both wages and salaried employees were invited to add any further comments about work-life balance at the Wivenhoe Alliance. More comments were provided by salaried employees ($n=15$) than wages employees ($n=2$). In general, the additional comments provided by respondents strongly supported the introduction of the compressed work week. Most salaried employees who provided additional comments expressed their satisfaction with the compressed work week. For example, one respondent wrote, "Have enjoyed the five day week—would prefer to put in extra hours during the week if it means having every weekend off." Another commented, "The five day week is fantastic. This is the way the whole industry should operate."

Many salaried respondents also identified "knock-on" effects for work (e.g., productivity and loyalty to the organization) and nonwork activities (e.g., family activities and domestic duties). For example, one wrote:

"In the last (x) years I've always worked a six day week and was often stressed and tired by Saturday. On this job I've felt very relaxed on the weekend...I've also been able to complete all my jobs around the house. Our crew is happier because their money hasn't changed much and they have a life. I personally think that productivity has been excellent because everybody is fresh and happy."

Several salaried respondents directly linked the 5-day week to employee retention. For example, one commented, "A commitment to pursue a five day week across the business would help people make loyal decisions at project completion . . ." and another wrote, "A five day week is what I and my family now demand. I will not work six days again, even if it means changing to another industry."

In contrast, only two wages employees provided further comments at the end of their questionnaires and both of these comments related to the concerns of wages employees that alternate work schedules not impact upon their weekly take-home pay.

Interview Data

Interviews conducted with both wages and salaried employees at the Wivenhoe site supported the survey data in confirming that the move from a 6- to a 5-day week was regarded very positively and perceived to have a number of benefits by both wages and salaried employees.

Typical comments included: "Personally, I find that this is perfect. The eleven hour day, five-day week. Because I still have a good income, but I get two days" (wages staff) and "I don't know anyone that complains about this five-day week. Fantastic" (wages staff).

Several benefits were perceived to be associated with the compressed week. These benefits included improved productivity, increased involvement with home/family and other nonwork activities, increased opportunity for rest and recuperation from the long working week, and increased organizational commitment.

A number of interviewees commented that the 2-day weekend allowed them to adequately recover from the working week. For example, one interviewee commented: "I find that you do feel tired but the weekends rejuvenate you and gives you a bit more energy because you get to do things that you want to do and you look forward to the weekends a bit more. You do feel tired on

Table 2. Employees' Preference for 5- or 6-Day Week

Preference	Numbers of staff		
	Combined	Wages only	Salary only
Very strongly prefer 5 days	30	14	16
Prefer 5 days	4	3	1
Slightly prefer 5 days	2	1	1
No preference	3	2	1
Slightly prefer 6 days	0	0	0
Prefer 6 days	2	2	0
Very strongly prefer 6 days	1	1	0

Table 3. Differences between Interview Responses (Wivenhoe Employees and Control Group)

	Wivenhoe site	Non-Wivenhoe (control)
Current WLB issues	Long hours; travel time (Site was approximately 1 h drive from city center—at least 30 min drive for most employees.)	6-day week (site staff); travel to site; long hours; weekend working (office staff)
Factors supporting WLB	Primarily project manager, then immediate supervisor and organization (senior management)	Immediate supervisor—mixed perceptions of organizational support for WLB
Employing organization's concern for WLB	Very positive; perceived as highly flexible—open to negotiation and supporting formal WLB initiatives	Mixed; negotiation determined by attitude of immediate supervisor—limited awareness of formal WLB initiatives

Note: WLB denotes work-life balance.

Thursdays/Fridays—that you need a break. But the two days does give you that break that you need, so it makes up for it” (salaried staff).

Another interviewee said of the 5-day week, “I think it is a great thing. Because you can plan things as well having a weekend off, you can go somewhere, even it is only for a night—go Saturday, come back Sunday. And you are still refreshed to go back to work on Monday” (wages staff).

The interview data also supported the survey data in indicating that the compressed work week was perceived to improve Wivenhoe employees’ work-life balance. Example comments were: “The five day week has just made it incredible. I’ve talked to the workers out on site. I mean, they get to spend a whole weekend with their kids and their families now, not just one day” (salaried staff) and “Since Wivenhoe has gone to a five day week it has increased my enjoyable lifestyle, substantially” (wages staff).

The link between work hours, work-life balance, and productivity also emerged as an important theme in the interview data from Wivenhoe participants. One salaried employee expressed his appreciation of the compressed work week in the following way:

“I was actually contemplating whether the construction industry was for me. And I was becoming active in seeking other roles. And then the elimination of the Saturday work—really saved that. So if it wasn’t for that, [I] probably wouldn’t be here at the moment. And, not only had I felt the change, and the huge benefit—my wife has as well. She immediately saw a totally different person on the weekend. So that was really positive. But now I am much happier, much more energetic at work. So I concentrate for longer—well, for the entire time I am here. Whereas before there were times that were non-productive.”

Comparison with Control Group Interviews

Table 3 shows a comparison between interview data collected from Wivenhoe project employees and members of the non-Wivenhoe control group.

Workers at the Wivenhoe site typically worked longer hours than head office staff in the control group. They also reported longer commuting times to and from work. Despite the increased demands on Wivenhoe project-based interviewees arising as a result of work schedules and commuting time, Wivenhoe employees’ work-life balance and satisfaction were reported as high relative to members of the control group who were located in the company head office.

In comparison to site workers in the control group (working on other projects), Wivenhoe project employees were considerably happier with their work-life balance. Typically, the control group employees were employed on sites operating on a 6-day week.

Site-based control group interviewees reported dissatisfaction with working weekends and the negative impact of weekend work on family time or time with friends/partners.

Generally, Wivenhoe interviewees believed they had the opportunity to negotiate individual short-term work-life balance issues (e.g., going to the doctor, or other necessary appointments) and perceived that their line managers had a very positive attitude toward accommodating work-life balance issues. This perception was noticeably less common in the control group.

All interviewees, both those from the Wivenhoe project and those in the control group, were aware of their organization’s publicly stated concern for employees’ work-life balance. However, among the control group there was skepticism about the sincerity of these statements. The control group members, who were only drawn from one of the companies participating in the alliance, suggested that the company’s senior management expressed a verbal commitment to work-life balance but that this stated commitment was not translated into tangible work-life balance benefits. In contrast, the Wivenhoe project employees expressed the belief that their employing organization was genuine in its concern for work-life balance. The evidence cited for this was that the Alliance Management Team was actively demonstrating its concern for employees’ work-life balance by implementing changes at the Wivenhoe site.

Perceptions of Project Alliancing

Another theme of interest that emerged from the interview data was the perceived advantages offered by project alliancing as a mode of project delivery. This theme was raised, unprompted, by 38% of wages staff and 20% of salaried staff interviewed.

Most interviewees commented upon the difference between work-life balance on “hard dollar” contracts and project alliances. For example, one interviewee said, “. . . The work life balance on a hard dollar contract would be different to here, I reckon.” It was suggested that the reason for this was the level of pressure and resourcing of alliance projects. For example, one interviewee said, “. . . The whole Alliance culture is really good...There is probably not as much pressure as there would be on a hard dollar job.”

Several interviewees attributed the introduction of the compressed work week to the project alliance delivery strategy, suggesting that this would not be possible in traditionally delivered projects. One interviewee said, “Well if you go to a...hard dollar contract for the next one, it might well be program-driven—need to do six days again.” This view was shared by a managerial employee who said “I think this job is an exception, not the rule. I think alliancing is conducive to being able to do this because we

can make more money by being smarter and changing the designs and being efficient, whereas the 'old school' way of making money in construction is going faster and harder and longer—squeezing as much as you can out of resources over a finite period of time.”

Competitive pressures in the construction industry, in particular the traditional commercial relationships between clients and contractors, were identified as impediments to employees' work-life balance. One salaried interviewee expressed this as follows: “If you are tendering for a job, if it is a hard dollar. . . .then unless the client tells you that you will not work Saturdays and Sundays, then every contractor is going to allow in their price to work Saturdays—such that they can come in, and be more competitive in the fact that their overheads, their infrastructure, isn't tied up for that period of time.”

These comments, which were unprompted by the interviewers, support the contention that innovative methods of working, designed to improve employees' work-life balance, are more likely to be implemented in the collaborative context of a project alliance.

Discussion

The Wivenhoe Dam upgrade was officially completed on September 22, 2005, six months ahead of the scheduled completion date. The project also cost less to construct than originally estimated, the final project cost being considerably lower than the estimated project turn out cost. Taking the traditional metrics of cost and time, the Wivenhoe Dam project was therefore a remarkable success.

Owing to the fact that the introduction of the compressed work week on the Wivenhoe project was subject to a post hoc evaluation it is impossible to determine to what extent the introduction of the compressed work week contributed to the Wivenhoe Alliance project's good performance in terms of cost and time. In the absence of a rigorous experimental design, inferences about cause and effect cannot be made. Also, the compressed work week was only one of a number of innovative human resource management practices introduced at the Wivenhoe site. Others included leadership and time management training and a health and fitness program (available only to salaried employees of the construction contractor involved in the Alliance).

Given that the compressed work week was not introduced in isolation, it is impossible to determine its individual impact upon employee morale and performance. However, the evidence collected in the survey and interviews suggests that the Wivenhoe employees perceived the compressed work week as being a very important benefit which the employees linked to productivity benefits. Coupled with the Wivenhoe project's objective performance data, this demonstrates that the introduction of the compressed work week did not prevent the Alliance from exceeding its performance objectives and meeting client expectations with regard to the traditional metrics of time and cost.

Thus, the Wivenhoe case study provides *prima facie* evidence that alternative work schedules designed to help employees to achieve a better work-life balance are not incompatible with the attainment of time and cost objectives in the context of a construction project.

Research conducted in other industries consistently links work-life balance with job satisfaction, organizational commitment, employee retention, and productivity (Allen 2001; Bedeian et al.1988; McCampbell 1996). Therefore there is some empirical

basis for suggesting that work-life balance initiatives might even contribute to improved individual and organizational effectiveness in the construction industry. The Wivenhoe results support this contention. In particular, the qualitative interview data collected from Wivenhoe employees suggests that the introduction of the compressed work week enabled employees to adequately rest and recuperate and be more productive on their return to work after the weekend. In this respect, it appears that the introduction of the compressed work week may have been a significant factor in the creation of a high-performance work system at the Wivenhoe site.

Institutional theorists assert that, in industries in which the provision of work-life benefits is not already widespread, those organizations that do provide such benefits offer significant inducements to employees to exert organizational citizenship behaviors, such as performing at above-expected levels and remaining in the employment of the organization for long periods of tenure (Ingram and Simons 1995). In the Australian construction industry, few organizations have implemented work-life balance initiatives and Lingard and Francis (2007) argue that progressive, family-friendly firms are likely to be rewarded with increased employee loyalty and performance. Hence, in moving to a 5-day week at Wivenhoe, the Alliance Management Team may have fostered a high level of loyalty and commitment from employees, which translated to enhanced effort and elevated performance.

The interview results also suggest that the fact that the Wivenhoe dam upgrade was delivered as a project alliance is a relevant factor to the success of the work-life balance initiative. There was a strong belief among Wivenhoe employees that the alliance delivery method enabled the Alliance Management Team to implement the compressed work week.

In the Australian construction industry a 6-day week is the norm and the move to a 5-day week at Wivenhoe was an innovative and unusual measure. Many of the employees interviewed suggested that, under traditional project delivery arrangements, the introduction of the 5-day week would be unlikely. Reasons for this include the fact that, under traditional arrangements, the risk associated with the move to a 5-day week during the construction stage of the project would be borne entirely by the construction contracting organization. In this situation, if the 5-day week improved performance, the contracting organization would reap the benefit. However, if the 5-day week hindered performance, the contracting organization would stand to be heavily penalized. For example, a contractor would incur liquidated damages in the case of time overruns. As the outcome of alternative work schedules is currently unknown in the construction context, under traditional arrangements, a contracting organization may be unwilling to take such a risk.

However, the commercial arrangement underpinning a project alliance is based upon the sharing of risks and rewards. When interviewed, the Wivenhoe Alliance Project Manager expressed this as follows:

“. . .Then I guess the key for alliancing from that point on—everyone shares in the pain or the gain. So you haven't got a client/contractor mentality where one wins, one loses, that sort of thing. So if we all go well, everyone benefits, all share in savings. If things go badly and off the rails, we will lose. Obviously, when it comes to decision time—you've got a lot of decisions to make, obviously, throughout the course of the project. It helps to align people's thinking to come up with the 'best for project' solution.”

In the context of shared risk, the likelihood that innovative solutions to problems will be identified and implemented is

greatly increased (Walker et al. 2002; Hutchinson and Gallagher 2003). Thus, at Wivenhoe, the risk associated with implementing the compressed work week was shared between participants, who also all stood to gain if the measures improved productivity and performance.

Consistent with the Wivenhoe results, Walker (2002) has also suggested that strategies to resolve time pressures and avoid burn-out among project team members are easier to implement in collaborative project delivery arrangements. He suggests that the avoidance of a "time trap," in which there is a lack of time or a lack of schedule flexibility in a project is important because such traps lead to frustration as well as dampening employee enthusiasm and commitment. However, strategies to prevent these time traps require mutual adjustment between project participants. Walker suggests that mutual adjustment provides the ability to share resources between a "project pool" and solve problems jointly without creating an additional burden for any individual project participant. However, such resource pooling, argues Walker (2002), is extremely difficult to achieve in traditional project delivery mechanisms and is much more likely to eventuate under the collaborative conditions of project alliancing.

Moreover, not only are work-life balance initiatives likely to be easier to implement in project alliances, but the implementation of work-life balance strategies is also likely to facilitate the creation of the effective working relationships critical to the project alliancing. Kiers (2001) suggests that a key success factor in project alliances is the creation of a "Shared identity across organizational, functional and geographic lines" (Kiers 2001, p. 811). Arguably, the introduction of the compressed work week would have helped to create this shared identity on the Wivenhoe project. At Wivenhoe, project team members were colocated in a project office, thereby breaking down geographical barriers between participants. However, differences in work schedule could easily have diminished the sense of shared identity between project participants as nonconstruction personnel, such as members of the design team, would typically work a 5-day week. A situation in which some employees are perceived to enjoy a lighter workload and a less demanding schedule is likely to impede the development of a shared project identity and could even be a source of resentment and division. In implementing the compressed work week, the Wivenhoe Alliance Management Team eliminated an important distinction between project participants. This could have contributed significantly to the development of a shared identity and effective teamwork in the project.

One important aspect of the Wivenhoe results was the distinction between wages and salaried employees. Whereas, on the whole, both groups of employees supported the introduction of the compressed work week, wages employees expressed concerns about the maintenance of their income. Wages employees are remunerated on the basis of the number of hours they work and therefore stand to lose income if work hours are reduced. In contrast, salaried employees, who are mainly professional, managerial, or supervisory personnel, are not paid according to the hours they work. Indeed, during peak times project-based managerial and professional employees are required to perform significant amounts of unpaid overtime, often with little warning. Thus, it is much more likely that salaried employees would support a 5-day week than wages employees. The concerns expressed by the wages employees at Wivenhoe indicate that more research is required to explore ways in which work-life balance can be improved among blue collar site workers. This might require an examination of alternative remuneration mechanisms based upon production rather than time spent on site.

One model implemented by the Acton Peninsula Alliance Management Team during the construction of the National Museum of Australia involved the use of performance-based bonus payments. Under this model, benchmarks were established for project performance components. Performance was measured against these benchmarks by an independent panel before bonus payments were made. The traditional site allowance payment was replaced with a sliding scale payment based upon productivity and proven performance. (On many Australian construction sites the trade union has negotiated comprehensive project agreements that provide for the payment of an allowance over and above the normal hourly rate. This allowance increases as the project value increases.) The project experienced few industrial relations problems and no days were lost due to industrial action (Walker et al. 2001). This was unusual for high profile construction projects sponsored by the Australian Federal Government. The scope for replacing time-based remuneration with performance-based remuneration to overcome concerns about alternative work schedules should be explored in future work-life balance case studies.

Limitations and Future Research

One limitation of the Wivenhoe research was the lack of experimental design. This precludes drawing causal inferences about the effect of the work-life balance intervention. However, the research work is ongoing. Future evaluations of work-life balance will utilize a robust multiple baseline experimental design to enable the impact of work-life balance strategies to be rigorously evaluated.

Conclusions

In combination, the survey and interview data reveal that, overall, the compressed working week was viewed very favorably by both salaried and wages employees at the Wivenhoe Alliance project. Overall, the compressed work week was very successful in improving employees' work-life balance. Further, the project's time and cost performance suggest that the change to a 5-day week did not hinder the attainment of objectives in other key result areas of the project. Alliance employees were very satisfied with the compressed work week and reported a number of benefits, including increased physical and psychological well-being, greater motivation, improved productivity, increased job commitment, and increased involvement in home/family activities. These results suggest that strategies designed to improve employees' work-life balance may be a key component of high-performance work systems in the Australian construction industry. Further, the collaborative nature of project alliances, in particular the sharing of risks and rewards and the focus on "best for project" decision-making, appear to provide a supportive work environment in which innovative work-life balance initiatives can be implemented.

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