

# Next Generation Telework: A Literature Review

Department of Broadband,  
Communications and the  
Digital Economy

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# Glossary

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AHRI	Australian Human Resources Institute
CBD	Central business district
EU	European Union
HILDA	Household, Income and Labour Dynamics in Australia Survey
ICT	Information and communications technology
NBN	National Broadband Network
OH&S	Occupational health and safety

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# Executive Summary

As a result of the adoption of telework as a strategic government objective in the National Digital Economy Strategy, the Department of Broadband, Communications and the Digital Economy (DBCDE) commissioned Deloitte Access Economics to undertake an international literature review of telework as it is understood today. The Federal Government's goal is that by 2020, Australia will have doubled its level of teleworking so that at least 12 per cent of Australian employees report having a telework arrangement with their employer.

While a range of different definitions have been adopted across the literature, and a certain degree of variability is likely to persist for some years, a standard definition has been adopted for this report.

*Telework is an arrangement where an employee works from home on a regular basis. The employee utilises telecommunications technology in order to work from home in the same manner as they would in the traditional workplace.*

In 2006 the ABS *Time Use Survey* found that six per cent of all Australian employees had a telework arrangement in place with their employer. However these statistics are somewhat out of date and so 2009 estimates from the Household, Income and Labour Dynamics in Australia (HILDA) survey were obtained. These indicate that the share of Australian employees with a telework arrangement with their employer has slightly decreased. This suggests that the government target of 12 per cent remains some way off. Since many of the benefits of telework are unlocked with more frequent telework, this is likely to mean the benefits are not being fully realised.

In Australia, unlike other countries, there has until recently been no official policy to target the level of telework. The fact that Australia does not yet have a ubiquitous high capacity internet and communications environment may be constraining the more regular uptake of telework. The Government's recent establishment of the National Digital Economy Goal and the development of such a network via the NBN should be a catalyst for the uptake of telework.

## Benefits of telework

The benefits of telework accrue to employers, employees and society as a whole.

### *Benefits to employers*

- Recruitment and retention—by removing the geographical barriers to work, telework enables firms to widen the talent pool to recruit the best staff. Telework makes an employer more attractive to potential employees, and enables existing staff who relocate to stay with the firm and move into telework.
- Reduced absenteeism—telework can reduce the number of days spent off sick due to minor illness (where the employee could work but stays home to avoid infecting others) and particularly days off to care for a sick child or other dependent.
- Business resilience—during emergencies such as natural disasters, epidemic threats, transport strikes or inclement weather, telework can enable employees to continue

working from wherever they are. This applies in cases where emergencies have not affected relevant telecommunications infrastructure and in workplaces where employees are telework-ready.

- Increased productivity—telework has been associated with productivity gains owing to the quieter nature of the home work environment, the freedom to work in comfort, and a reduction in exposure to office politics. In addition, many teleworking employees put some of the time saved from not commuting back into additional time working.
- Cost savings from reduced office space—as the rate of telework increases, reducing the number of staff in the office, it becomes possible for the firm to cut back on office floorspace and save on rental costs.
- Cost savings from lower utilities expense—lower electricity, gas and water consumption can result from telework, both from having fewer employees in the office and, after time, from having a smaller office space.
- Office decentralisation—when a large share of employees are teleworking, it may be possible to relocate the office to a less central location as there is no longer the same need to be located in a transport hub for easy access by workers.

#### *Benefits to employees*

- Savings in costs—by not commuting to work each day workers make savings through petrol and toll costs avoided, avoided vehicle maintenance and potentially lower insurance costs. Those who take public transport avoid the cost of tickets. Employees may also make some savings from avoided clothing, dry cleaning and food expense.
- Flexibility in hours and improved work/life balance—employees have some ability to rearrange their work hours around work and personal needs under telework, although they must be contactable during standard business hours. Through removing time spent travelling to the office, and enabling flexibility in hours, telework may enable improvements in the employee's work/life balance.
- Increased job satisfaction—this flows from avoiding the stress of commuting, as well as the fact that flexible working arrangements are perceived by the teleworker as an indication of their value to their employer, leading to a more positive perspective.
- Greater ability to participate in the workforce—for some, particularly those who are carers, persons with a disability that presents accessibility issues for the traditional workplace, and those living in regional areas with fewer job prospects—the option to telework may facilitate their moving into the labour force.
- Flexibility of location—full-time teleworkers do not need to live close to the main physical office, giving them more flexibility when deciding where they would prefer to live. For those who would rather live in a country town or region, or an area where real estate prices are lower, telework enables them to do so without sacrificing their career.

#### *Benefits to society*

- Reduced traffic congestion and infrastructure demand—as telework gets cars off the roads there is less traffic congestion, particularly during peak periods. Lower congestion means the need to expand roads and the public transport network is avoided or deferred.
- Regional development—because of the flexibility of location afforded by telework there may be some relocation out of major cities and towards regional communities,

providing scope for their development. This may also allow those living in these communities to continue doing so while working.

- Environmental impacts—the reduced travel and electricity consumption that results from telework leads to a decline in greenhouse gas emissions.

## Challenges of telework

While there are many key benefits to telework, certain challenges to employers and employees have held it back from wider adoption.

### *Challenges to employers*

- Technical feasibility—the lack of adequate ICT infrastructure and broadband services may mean that teleworkers cannot work as productively in the home office as in the commercial office. The high and uniform speeds of the NBN across populated areas of Australia will provide certainty to business of both the internet experience in the home office, and that this experience will roughly match the experience of the commercial office.
- Cultural issues and trust—in some circumstances there may be less incentive to work hard when unsupervised, and there may be more distractions at home. Developing arrangements around work requirements and expectations, as well as how output is measured can help to avoid the risk of employees becoming less productive when working from home. This concern can also be reduced by ensuring that the teleworker has a separate home office, where potential distractions are physically separated from the place of work, and by using reliable videoconferencing enabled through the NBN.
- Communications and management—some management reluctance is driven by concerns about change and the disruption costs imposed upon the business, and that communication will become more difficult. This arises because not all businesses have the ability to implement changes effectively. Concerns about this can be overcome by developing a business case that clearly shows the benefits of telework to the organisation, and an approach to its introduction that minimises disruptions. Open communication channels will become more important with an increase in telework.
- Security concerns—security of IT systems and sensitive business information is a concern with telework. The risk of security breaches can be mitigated through involving IT staff in developing a telework policy. Appropriate security for remote networks, broadband connections, and file storage are important considerations.
- Cost—the benefits of implementing telework will in most cases outweigh the costs. However the financial case can be hard to see as the financial downside occurs almost immediately, while some of the benefits can take several years to fully emerge. Developing a complete and long-term business case can help to demonstrate these longer-term merits and alleviate cost concerns.

### *Challenges for employees*

- Isolation—telework involves potentially long periods of working alone, and employees may lose the ability to effectively interact with their colleagues. This should be considered when deciding who is suited to telework. This risk of isolation can be overcome through part-time telework and coming into the office on other days, ensuring that the employee has adequate face-to-face time with colleagues to ensure they continue to effectively interact remotely, however this does reduce the benefits.



An alternative may be using emerging forms of communication, such as instant messaging, collaborative software and video conferencing.

- Exclusion from workplace decisions—some teleworkers noted that they were excluded from workplace decisions because they were not physically present and that in-office colleagues were hesitant to contact them at home. It is important that both the teleworker and business management make clear to in-office staff that contacting a teleworker at home should be undertaken as it would if they were in the office. Likewise, arranging for a teleworker to only work from home some of the time and to come into the office on other days may help with this. Alternatively, multi-party video-conferencing technology can be deployed throughout the organisation, whether at home or at an office.
- Inhibited career progression—this concern arises due to perceptions both that teleworker face an ‘out of sight out of mind’ mentality when it comes to opportunities, and the absence of opportunities to network or compare one’s performance against that of colleagues may reduce understanding of what is required to progress. This can be mitigated by ensuring that telework is embedded in an organisation’s processes so that no effort is required by the employee to remain involved and benefit from opportunities, as the same employment conditions need to be applied to all employees.
- Lack of technical assistance—a lack of support, including technical support, is one of the more commonly identified drawbacks of telework. Some basic ICT training should form part of the pre-telework training provided to employees, in order to help the employee handle minor issues. However it is also important that there are procedures in place for a teleworker to have IT issues rectified in the same way as an employee in the office by technical solutions such as screen sharing being made available.
- ‘Role blurring’ between work and personal life—while improved work/life balance is cited as one of the key benefits of telework, the absence of physical separation between work and personal life can lead to difficulties keeping the two separate. A home office that is physically separated, even if just by a door, will aid in defining the ‘work’ and ‘non-work’ components of the teleworker’s life. Additionally, establishing and keeping work hours, even if unconventional, will assist in keeping roles separate.

## Implementing telework

As indicated above, there are some real challenges to be overcome in the introduction of telework. Especially for larger organisations, a carefully planned, strategic approach to implementing telework can help to overcome these challenges and realise the benefits of telework. The extent to which a complete strategic review of telework is required depends upon the size and nature of the business, however for those businesses requiring a thorough approach there are several key steps to introducing telework.

- Establish the business case—this will assist in gathering support for telework among management, and will also help to determine the likely nature of the benefits in pursuing telework to the business.
- Undertake a pilot program—a pilot program with a limited number of employees will enable the firm to test this business case in a low-risk fashion, and allow the business to learn about how to best implement telework for their particular business.
- Develop a policy—this policy should cover arrangements such as how an employee moves into telework, what infrastructure will be provided, performance expectations and monitoring.

- Develop an evaluation methodology—the impacts of telework can be difficult to isolate in the business' bottom line, so alternative metrics should be used. These could include KPIs, as well as surveys, interviews and focus groups of teleworkers and their managers.
- Identify potential teleworkers—not all positions are equally suited to telework and nor are all employees. Identifying those who may telework successfully is an important step in maximising the benefits. However more advanced and ubiquitous broadband services such as the NBN may reduce barriers relating to work type or some employee characteristics, increasing the scope for additional telework.
- Ongoing monitoring—utilising evaluation metrics on an ongoing basis is important to ensure that telework continues to be of benefit to the organisation.

### **The role of the NBN**

The NBN has the potential to bring many additional benefits from telework, through increasing the efficiency of existing telework, and through broadening the scope for a wider range of Australian workers to telework. This occurs both through increased speeds, quality and reliability. Together these can enable new applications and ways of doing business, for example utilising multi-party videoconferencing, large file transfer and other as yet to be developed applications (IBES 2011).

### Policy considerations for telework in Australia

The current implementation of telework in Australia (limited uptake, on a fairly ad hoc basis and for only a few hours per week) means that the benefits are not being fully exploited. Policies to encourage more regular telework would assist in realising the benefits to employer, employee and society. The benefits of telework are wide-ranging and accrue to the employee, employer and wider society.

The potential benefits of telework for employers are large, and have the potential to generate large cost savings and productivity gains to business. Businesses should look to telework as a way of capturing efficiency gains.

Many of the challenges to telework can be overcome through changing perceptions. Organisations should take steps to make sure they implement telework in an intelligent way that avoids potential pitfalls and ensures the benefits are properly exploited. Careful planning, with recognition of the unique circumstances of the organisation, is crucial for this.

The importance of broadband, and specifically the NBN, in increasing the accessibility of telework and achieving the economic and social benefits it unlocks, lies in network speed, reliability and ubiquity, as well as the increased range of occupations that may become telework-ready.

As well as providing the tools for telework through the NBN, government can play a role in helping organisations to establish how they can make the most of telework. Many of the current challenges of telework are based around perceptions, and can be overcome through careful planning and execution of a telework strategy for each business' unique circumstances. Government provision of guidance and advice for businesses may assist with this.

Government should take the lead in its own operations through the adoption of telework in government agencies. This will provide a signal to the private sector and examples of how to best introduce telework. Further, given the size of government as an employer, widespread telework through government agencies will make the practice significant enough that it will directly impact labour markets.

Some of the society-wide benefits in particular can help progress towards other government objectives, such as increased workforce participation, regional development and reducing pressure on cities, and moving Australia towards a low-carbon economy. There are also potential benefits to government budget bottom lines in the form of avoided or delayed expenditure on transport infrastructure.

# 1 Introduction

In July 2010 the then Access Economics undertook a review of telework in Australia. The report included qualitative analysis of the benefits of telework to employers, employees and society as a whole, and undertook some high-level assessment of the benefits of telework. It was found that the potential benefits of telework were substantial, in the range of \$1.4-\$1.9 billion per year in terms of time savings, office space savings, workforce participation and staff turnover, if a rate of 10 per cent of all Australian workers teleworking 50 per cent of the time were achieved. The results of the 2010 study were relatively conservative compared with many, more comprehensive, international studies.

This report is a follow-up from the 2010 study. Resulting from the adoption of telework as a strategic government objective in the National Digital Economy Strategy, the Department of Broadband, Communications and the Digital Economy (DBCDE) commissioned Deloitte Access Economics to undertake a literature review of telework as it is understood today. This literature review is to encompass a range of issues:

- The various definitions of telework;
- What the current rate of telework is in Australia and how it compares to the international experience;
- The economic impact of telework on organisations;
- The benefits and factors encouraging telework, accruing to employers, employees and society as a whole;
- The challenges of telework and existing best practice in terms of overcoming these challenges;
- How next-generation networks, including the National Broadband Network, may influence telework in the future, including how the scope for and benefits of telework may shift; and
- Review of case studies of businesses that have implemented telework.

The report is intended to demonstrate the case for telework in Australia, and provide some policy implications for increasing the rate of telework, for both government and employers.

The report is structured as follows:

- Chapter 2 reviews the definition of telework and the economic impact of telework;
- Chapter 3 reviews the rate of telework in Australia and internationally;
- Chapter 4 analyses the benefits of telework to employers, employees and society as a whole;
- Chapter 5 considers some of the challenges constraining the uptake of telework;
- Chapter 6 reviews best practice for overcoming these challenges and for implementing telework; and
- Chapter 7 provides concluding remarks and analysis of the policy implications.

## 2 What is telework?

Interest in the idea of telework first arose during the oil crises of the 1970's (Scholefield 2009). As the cost of fuel rose rapidly, so too did the cost of the daily commute to and from the workplace. In addition, concern about the future supply of oil for fuel was rising and whether these increased costs would become permanent. Telework was suggested as a means around this; with individuals working from home or a centre close to their home, in order to avoid the astronomical cost of fuel.

While support for the idea showed promise, ultimately the oil crisis passed without a mass shift to this new mode of work. Over the intervening years, enthusiasm for the idea of telework has peaked during major emergencies (for example in the aftermath of the March 2011 disasters in Japan, and in the aftermath of the September 11 terrorist attacks in New York City) as workers have been unable to access the workplace. Interest has also been stimulated at different times by the advent of technologies that would make home-based work more accessible (such as the mobile phone and broadband). However telework has not yet taken off in the way that had been anticipated in those early days.

### 2.1 Telework defined

One challenge in undertaking a review of telework is that there has been no uniform definition established. The one element that is broadly agreed upon in most definitions is the reliance on information and communications technology (ICT) to undertake remote work. The Australian Telework Advisory Committee (ATAC) (2006) takes an otherwise very broad approach to telework.

*[Telework is] a form of flexible working, which is enabled by ICT, and undertaken outside of a traditional office environment.*

Georgetown Law (2010) is similarly vague.

*Telework technically refers to work performed with the use of a telecommunications connection to the workplace (e.g. computer, telephone), but the term is also used more generally to describe any type of work done from a remote location.*

Some require a certain regularity of telework, and a specific location. Scholefield (2009) is reasonably prescriptive, requiring that telework must be done from home, and at least one day per week.

*[Teleworkers are] paid employees who conduct their tasks from home at least one day per week, using communication technologies to do so.*

Others are fairly prescriptive about either location or frequency, but not typically both. Dixon (2003) is somewhat less prescriptive about the location of telework, but does require that the location of telework is closer to home than the normal office is, in order to capture benefits from travel avoided.

*[Telework is] the agreed performance of work outside the workplace using telecommunications technology... to replace all or part of the physical journey to work.*

Meyer (2000) considers that home is the usual location for telework, but that telework may also occur from other locations. There is agreement with Dixon (2003) that there is some level of travel avoided.

*[Telework is] working at home or at some other remote location and using communications technologies in lieu of travel to the office.*

The European Framework Agreement on Telework (2002) is not at all prescriptive about the location of telework, but requires a great deal of formality. Under this framework telework is typically included in an employee's employment, and there is a level of regularity in how often telework is undertaken.

*[Telework is] a form of work organising and/or performing work using information technology, in the context of an employment contract/relationship, where work, which could also be performed at the employer's premises, is carried out away from those premises on a regular basis.*

### 2.1.1 Types of telework

There are several ways in which telework can be implemented. Georgetown Law (2010) identifies four main approaches to telework:

- Hot desking is a type of telework where the employee works from a remote location part or most of the time, and from the main office the rest of the time. When the employee is in the main office, they use a non-dedicated, non-permanent workspace assigned for use on an as-needed basis, as opposed to having a reserved office space that goes unused when teleworking.
- Hoteling is similar to hot desking, but employees must reserve a space ahead of time.
- Telework centres are facilities that provide workstations and other office facilities that employees from several organisations can use. This type of telework is thought to be in decline (World Bank 2003), and this is evidenced by the fact that the US Government has withdrawn support for its Washington telecentres, viewing them as useful while they could provide better technology than the home office, but less useful in a world of widespread broadband, laptops and smartphones (Miller 2010).
- Collaborative offices are virtual work environments in which employees can work cooperatively from different locations using a computer network.

ATAC (2006) considers two additional types of teleworkers:

- Mobile teleworkers spend at least 10 hours per week doing work while away from their main place of employment, including via their mobile phone while on the move; and
- Day extenders are those who work from home during evenings or weekends on an ad hoc basis, usually as required to meet deadlines during busy periods.

### 2.1.2 Focus of this report

While a range of definitions have been adopted across the literature, and a certain degree of variation is likely to persist for some years, a standard definition has been adopted for this report.

*Telework is an arrangement where an employee works from home on a regular basis. The employee utilises telecommunications technology in order to work from home in the same manner as they would in the traditional workplace.*

This definition has been adopted here because a certain degree of regularity in telework is important for enabling businesses to develop policies and procedures which maximise the benefits of telework. The concept of working from home in the same manner as in the office is crucial for the maintenance of worker productivity. A regular arrangement does not require frequent telework—even one day per month will generate some benefits—however if telework is on an ad hoc basis then many of the potential cost savings to business cannot be planned for or realised. However the benefits will increase with the frequency of telework (see Chapter 4 for details). This also specifically excludes the self-employed, who are typically excluded from the definition of telework in the literature.

While some parts of the literature identify working from a telecentre as a form of telework, this approach has been excluded here as the potential benefits of telework such as time and cost savings and environmental benefits are not fully realised. Furthermore, a World Bank (2003) review suggests that the telecentre approach may not be commercially viable without ongoing government support. Similarly, in the United States the Obama Administration recently repealed its support for telecentres in the Washington area citing the feasibility of home-based options to now better support telework (Miller 2010). In Australia the advent of ubiquitous high-speed broadband will make telework from home readily available, meaning telecentre models of remote working are likely to be no longer viable as a consequence.

## 2.2 Impact of telework

Measuring the specific impact of telework at the business level is a difficult task using averages alone. Without detailed information regarding who is teleworking and how often they work from home, their industry of employment, the distance that they would have travelled to and from work without telework, and a range of factors regarding how the business implemented its specific telework program, such measurement necessarily relies on averaged data. While at a very large-scale level the use of averages may be reasonable, at the business-level this may overstate or understate the nature of the impact.

Some studies have utilised these averages at a large scale to develop a sense of the overall potential impacts of telework at a national level. Lister (2011) reviewed the total potential impact of telework in Canada, expressed as cost savings and benefits generated. These impacts were estimated based upon the assumption that a given number of employees telework two days per week. The number of employees that undertook telework was in turn based on the compatibility of telework to occupational roles. As such, in the whole-of-Canada estimates, it was assumed that all those in telework compatible roles undertake telework two days per week.

The impacts to employers take into account increased employee productivity, real estate impacts and changes to the rates of absenteeism and staff retention. Employee impacts include time savings and travel and work expenditure savings. The community savings incorporate energy savings and environmental degradation avoided, changes to the rate of motor vehicle accidents and changes to healthcare expenditure.

Overall the impact of telework in Canada, if exploited to its full potential using existing technologies, would be a saving of \$53 billion annually. The details of this saving are provided in Table 2.1.

**Table 2.1: Potential savings through telework, Canada**

Group	1 teleworker	250 teleworkers	Canada (millions)
Employer	\$10 037	\$2 492,146	\$44 000
Employee	\$1939	\$484 738	\$8500
Community	\$132	\$32 940	\$578
Overall	\$12 108	\$3 009 825	\$53 100

Source: Lister 2011

Lister (2010) also undertook a study of the impacts of telework in the US. Using a similar methodology, but assuming teleworkers work from home half of the time, it was found that the potential benefit if all employees in the US with roles that were amenable to telework moved into a part-time telework arrangement the total economy-wide impact would be \$645 billion. This study also incorporated reduced expenditure on highway maintenance as a community-level benefit, but excluded health care benefits.

### 2.2.2 Australian impact

In 2010, Access Economics reviewed the magnitude of some of the potential benefits of telework. Results were broken down in to high and low real estate scenarios in order to capture the benefits for both large and small firms. Relative to the estimates in the literature here, it produced a highly conservative estimate of \$1.4-\$1.9 billion per annum. The results in the table below indicate that time and cost savings from travel avoided were driven by the total hours teleworked. However office cost savings were driven by the number of teleworkers, rather than the amount of time spent teleworking. The results also imply that unless teleworking is undertaken on a large scale, office cost savings are only small, or lead to losses, as seen in the low real estate scenario. This is due to home office set-up costs.

**Table 2.2: Total high-level benefits of telework (\$m)**

Benefit of telework	Low real estate	High real estate
Time and cost savings from travel avoided	1270	1270
Office cost savings (high real estate scenario)	(350)	130
Increased labour force participation	380	380
Retention of relocating staff	90	90
Total	1390	1870

Source: Access Economics 2010



There are three significant points of differentiation between the Access Economics report and the methodology used by Lister (2011):

- The Access Economics study assumed a telework rate of 10 per cent of all employees teleworking 50 per cent of their time (i.e. an average of 2.5 days per week). Lister (2011) imputes telework rates by making assumptions about the rate of telework in suitable occupations rather than a whole-of-population analysis. As a result the size of the benefits in the Lister study was roughly three times greater. This difference is attributable to assumption sensitivities such as the derivation of telework rates.
- A number of additional metrics are considered in the Telework Research Network studies that were excluded from the Access Economics studies due to difficulties in accurately estimating these. In particular, the Access Economics study did not attempt to quantify productivity benefits of telework, which account for more than half of the total impact in the Telework Research Network reviews of Canada and the US. Other metrics covered by the Telework Research Network but not Access Economics include reduced absenteeism, savings to employees from food and clothing expense avoided, and motor vehicle accidents.
- Some of the assumptions used in the Canada and US studies are relatively more generous, for example, the magnitude of office floor space savings relative to the rate of telework and the cost of staff turnover.

Deloitte Access Economics undertook some basic estimates of the impact of telework in Australia utilising the Telework Research Network assumptions. These found an estimated impact of telework at 40 per cent of all workers teleworking two days per week of \$40.5 billion. Of this, \$21.2 billion, or 52 per cent of the total, were attributable to the estimated increase in labour productivity.

#### Policy implications: What is telework?

Telework is a term that can refer broadly to any work done away from the office using ICT equipment.

Some benefits, including travel benefits, are best exploited through telework from home, and with a certain degree of regularity. This makes regular telework a preferable policy to the use of telecentres or irregular telework.

Measurement of the impact of telework at low levels can be challenging, however when the level of telework becomes high the size of the benefits is potentially large.

In order to improve the ability to measure the impact of telework for Australia, government could do more to collect data measuring telework, and matching it with data on the location of those who telework.

## 3 Rates of telework

### 3.1 Australia

According to data from the ABS' *Time Use Survey*, just six per cent of all Australian employees had telework arrangements with their employer in 2006 (ABS 2009). This figure incorporates all arrangements, from full-time telework through to occasional arrangements.

Table 3.3: Telework arrangements, ABS data, Australia, 2006

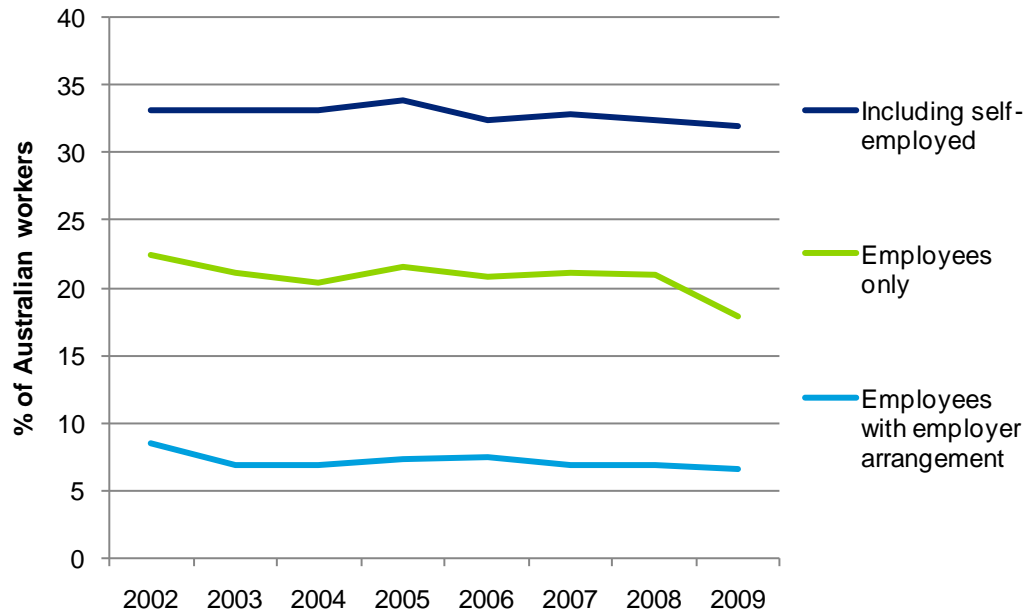
	Total Employed Persons (000s)	Employed Persons with a Teleworking Arrangement (%)
Type of employment		
Full time	6786	7
Part time	3298	5
Sector of employment		
Public sector	1832	9
Private sector	7897	6
Household type		
With children under 15	3721	8
Without children under 15	6362	5
<b>Total employed persons</b>	<b>10 083</b>	<b>6</b>

Source: ABS (2009)

However these ABS statistics are now nearly five years old and as such do not provide a contemporary picture of telework in Australia. Alternative data to provide a more up-to-date picture was sourced from the Household, Income and Labour Dynamics in Australia (HILDA) Survey. The statistical significance of data from these two sources is comparable, as the ABS survey covered 3900 households, while each round (wave) of the HILDA survey covers around 7000 households.

The HILDA data indicates that the share of Australian employees with a telework arrangement with their employer has slightly decreased. However the overall level of telework by employees is higher, with around 18 per cent of all surveyed Australian employees undertaking some work from home in 2009 (see Chart 3.1). This difference is due to the fact that many individuals who telework do so on an informal basis, rather than those who have a formal arrangement with their employer. These informal teleworkers are likely to mostly be 'day extenders' who undertake some additional work from home that could not be completed during standard business hours in the office, or individuals who telework on an ad hoc basis around family needs (e.g. when a dependent child is ill).

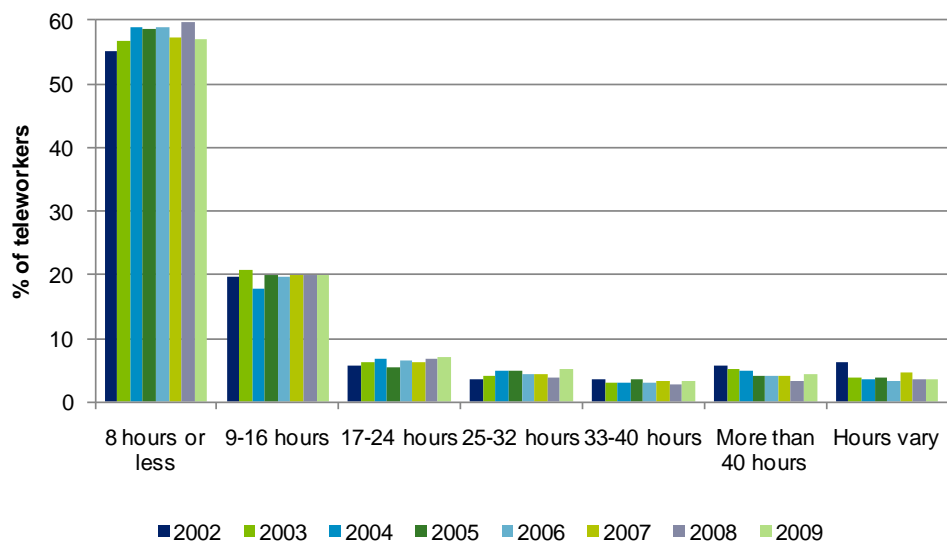
Chart 3.1: Rate of telework in Australia, HILDA data



Source: HILDA survey data waves 2-9, 2002, 2009.

The overwhelming majority of teleworkers in Australia only undertake telework on a part-time basis (see Chart 3.2). Nearly 60 per cent of all teleworkers in Australia (including the self-employed) undertake work from home for eight or fewer hours per week (equivalent to approximately one working day per week). Conversely, less than 10 per cent—or 2.4 per cent of the total workforce—works from home 33 or more hours per week (indicating more than four days per week or, effectively, at or near full-time telework). Since many of the benefits of telework are unlocked not just by participating in some telework, but by frequent telework, this is likely to mean the benefits are not being fully realised.

Chart 3.2: Frequency of telework



Source: HILDA Survey data waves 2-9, 2002-2009; includes self-employed.

One limitation of the HILDA data survey is that the level of telework includes the self-employed, limiting the usefulness of analysis on an industry-by-industry basis. In industries where teleworkers are more likely to be employees, telework levels are overall considerably higher in white-collar industries such as rental, hiring and real estate services, professional scientific and technical services, and information media and telecommunications. Telework is more uncommon in personal service-based sectors such as accommodation and food services.

## 3.2 Internationally

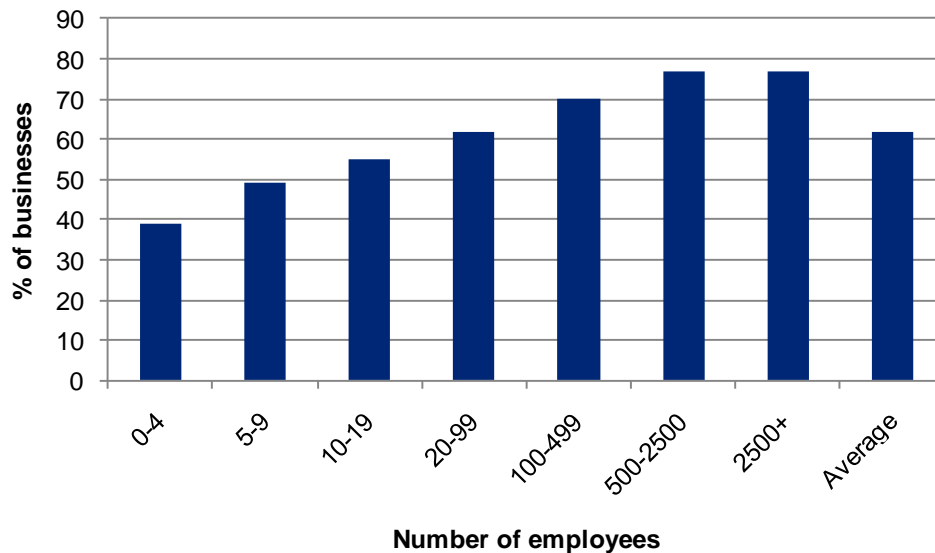
### 3.2.1 North America

#### United States

It is estimated that around 16 million US employees work from home at least one day per month, or around 10 per cent of all employees (World at Work 2011). This represents a decline relative to the 2008 figures, which is attributed by World at Work to weaker labour market conditions and reduced job security, and a desire to avoid any steps that may lead them to being perceived in a negative light (such as seeking a change to their employment conditions). However among those who do telework frequency is increasing, with 84 per cent of all teleworkers, or 8.4 per cent of the total workforce, reporting that they telework at least one day per week, while 4.5 per cent of the total workforce teleworks 'almost every day', indicating at or near full-time telework.

Rane (2011) found that in the US it is larger businesses that are more likely to offer telework to employees, with more than three-quarters of all businesses with 500 or more employees allowing some remote work, compared to less than half of all businesses with fewer than 10 employees (see Chart 3.3). However when smaller businesses in the US do allow telework, Rane (2011) found they were more likely to have a higher percentage of employees engaged in telework, and that these employees were teleworking more often than the employees of larger businesses.

Chart 3.3: Businesses allowing remote work, USA, 2010/11



Source: Rane 2011

## Canada

The Telework Canada report prepared by Lister (2011) reports that around 40 per cent of all jobs in Canada are thought to be telework-compatible using already existing ICT infrastructure. However the actual level of telework in Canada falls a long way short of this potential. As of 2006 some seven per cent of Canadian workers, including the self-employed, consider home to be their primary place of work (2006 Canada Census data). When the self-employed are excluded this estimate falls to around 3.5 per cent (Deloitte Access Economics estimates based upon Turcotte 2010). In 2008 a total of 11.2 per cent of all employees indicated that they work from home at least some of the time (Turcotte 2010).

This level of telework comes in spite of the fact that as far back as 2001, some 40 per cent of Canadian workers indicated that they occasionally worked from home (although not necessarily on a paid basis, nor in any formal arrangement). These figures suggest that the level of telework has stagnated in Canada over recent years.

### 3.2.2 UK and Europe

#### United Kingdom

In the UK, the raw figures show 12.8 per cent of the workforce, or 3.7 million people, reporting that they worked mainly at or from home in 2009<sup>1</sup>. However two-thirds of these teleworkers are self-employed, meaning the figure of employees who telework more than three days per week is around 4.3 per cent. In comparison, 2.9 per cent of Australian employees telework this often.

<sup>1</sup> [www.flexibility.co.uk](http://www.flexibility.co.uk)

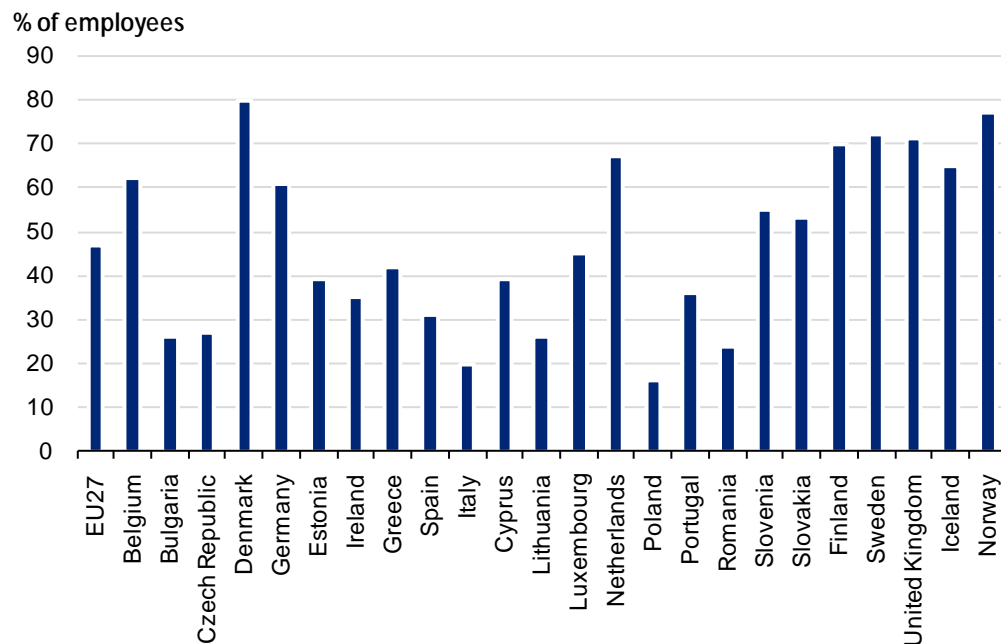
The figure for telework as a whole would appear to be much higher, with a further 20 per cent of the UK workforce indicating that they work from home for less than three days per week, however this figure includes the self-employed, who are not included in the definition of telework for this report.

### European Union

The European Framework Agreement on Telework was signed by member nations of the European Union in 2002, and agreed to by those countries that joined the EU in 2004 and 2007. The framework is aimed at providing teleworkers with greater job security, and to help prepare the EU for the transition to a knowledge-based economy.

The support that EU member nations have provided telework, as it became a strategic government objective and policies and campaigns were introduced to encourage uptake, is likely to have played a role in the relatively high uptake of telework in European countries. The rate of employees working away from business premises utilising ICT technology is very high, with the rate of employees undertaking work in this fashion exceeding 70 per cent in several Scandinavian countries (although this incorporates a broader range of activities than under the definition of telework used in this report).

**Chart 3.4: Employees working part of the time away from business premises and accessing IT systems from there, 2006**



Source: Eurostat. Note: These numbers include some work activities other than working from home, including telecentres and mobile work.

### 3.2.3 Rest of the world

#### Japan

Japan was relatively late to implement telework. However the gap to European and other countries has closed more recently. As of the year 2008 surveys indicated that 15.2 per cent of all Japanese workers were teleworking more than eight hours per week (Hanayama 2010). This is not easily comparable with the estimates from other countries where employees have teleworked 'some of the time', as it includes the self-employed. A comparable estimate for Canada, incorporating all workers, is around 19 per cent (Turcotte 2010), while in Australia 12.6 per cent of all workers, including the self-employed, telework more than eight hours per week. Based upon the trend and level of interest in the adoption of telework it was anticipated that the level in 2010 would have exceeded 20 per cent of all workers.

### 3.2.4 The potential for additional telework

While the level of telework is growing there remains significant scope for the pool of telework globally to grow. Early estimates from Doherty (2000) suggest that between 25 per cent and 65 per cent of all jobs in North America and Europe could be at least partially teleworked. The rate of ICT innovation over recent years, with the widespread rollout of broadband and faster internet services, increased mobile phone usage, and the advent of mobile broadband and personal digital assistants, means it is likely that the potential for telework today is higher.

Continuing innovation into the future will continue to broaden the scope for telework. For example, the rollout of high-speed, high-bandwidth services through the NBN will broaden the potential for telework in Australia as it becomes possible to undertake a wider range of roles remotely. The development of new applications and platforms, using both new and existing infrastructure services, will also increase the scope for telework and improve the efficiency of telework for those to whom it is already available.

Policy implications: The rate of telework

The majority of telework in Australia is undertaken informally, which possibly reduces the potential for the benefits of telework to be fully exploited. Formalising telework arrangements would enable businesses to implement policy and procedures to more fully exploit the potential benefits.

Most Australian teleworkers work relatively few hours from home, with around 60 per cent working less than one full-time equivalent day from home each week. Because the benefits of telework increase as the frequency increases, employers should look to encourage greater frequency of telework.

The recent adoption of increased telework as a strategic government objective, outlined in the National Digital Economy Strategy, will assist in increasing the rate of telework and preparing the economy for transition to a knowledge-based society.

Furthermore, the current government objective focuses only on the total number of workers engaged in telework and not the frequency. Encouraging both increased incidence and frequency would help to maximise the benefits. SMEs have been seen in the USA to use telework at a higher frequency once it is adopted and so encouraging telework adoption among this group of businesses may be a suitable approach.



## 4 Benefits of telework

Telework brings a range of benefits to three groups: the employers who decide to enable some or all of their employees to telework, employees who telework, and society as a whole. This chapter reviews these benefits.

Many of these benefits were reviewed in the Access Economics (2010) report prepared for DBCDE. However recent literature enables this study to expand upon some of these benefits, and to provide evidence from other countries on what the size of these benefits may be.

### 4.1 Employer

Those employers that have adopted telework have found it an overwhelmingly positive experience. The Sensis Business Survey (2009) found that 82 per cent of SMEs that had adopted telework felt it was a positive for their business.

Lafferty (2000) reports results of a survey reviewing the perceived advantages of telework among businesses that had adopted telework. Table 4.4 reports the percentage of businesses that perceived each of the nominated benefits as 'highly important' outcomes of telework. These businesses found, on the whole, that increased productivity, adoption of communications technology and increased flexibility in their use of staff. However reduced cost of office accommodation, one of the more commonly highlighted benefits in the literature, was not realised by as many businesses.

**Table 4.4: Perceived advantages of telework, businesses with telework**

Advantage	% of businesses rating as 'highly important'
Higher productivity	54.8
Increased adoption of communications technology	44.5
More flexible use of staff	44.1
Better retention of experienced staff	23.0
More flexible use of infrastructure	22.4
Improved employee morale	21.5
Greater commitment to company goals	19.0
Reduced cost of office accommodation	5.8

Source: Lafferty 2000

#### 4.1.2 Productivity benefits

##### Recruitment and retention

The traditional business model places a geographical constraint upon finding and keeping workers, namely that businesses could only recruit the best person who lived within a reasonable commuting distance of the business office, or who was willing to relocate to a

reasonable commuting distance. However telework provides greater recruitment flexibility to businesses by enabling them to recruit the best candidate for each role, regardless of their location (Lister 2011).

It may be that, even with this flexibility, the best candidate for a role is local. Even in this case telework can provide a benefit to the business, as flexible work practices are attractive to potential employees (Yasbek 2004). Overall, therefore, telework enhances the ability of firms to attract the best recruits.

Once the firm has utilised telework to recruit the best talent, they are also able to use telework to keep them. While some employees will inevitably choose to move on to new opportunities, telework can enable the retention of those who would otherwise have to resign in order to relocate. Lister (2011) estimates that allowing telework as a means of avoiding the loss of employees who relocate would lead to a reduction in employee attrition of seven per cent.

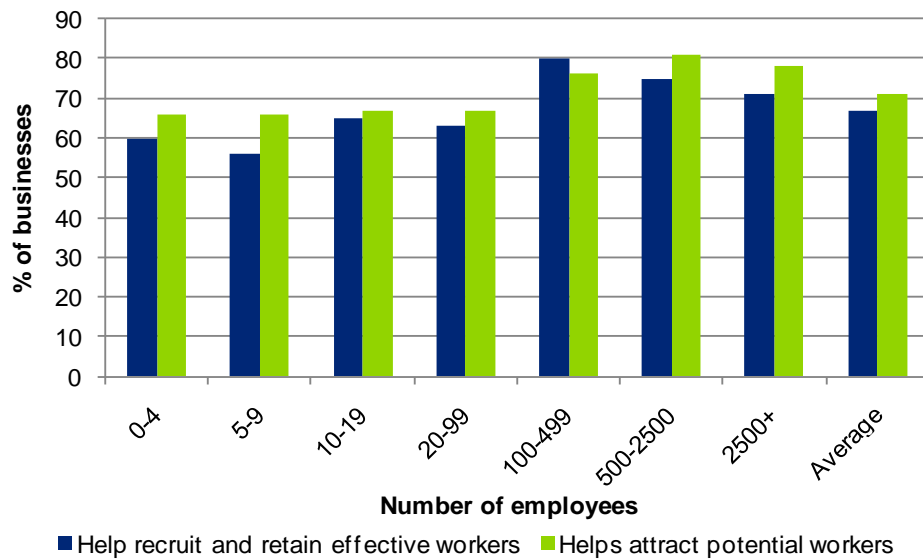
When an employee resigns they take with them important corporate knowledge and job skills, meaning the firm loses productivity, at least in the short term. In addition, there are substantial costs in finding and recruiting a replacement. Telstra (2008) estimated these costs to be 15 per cent or more of the annual salary of the departing employee. Other studies have suggested substantially higher figures. The US Department of Labor suggests this cost may lie in the range of 33 per cent of the departing employee's salary<sup>2</sup>, while in 2008 the Australian Human Resource Institute (AHRI) reported that for skilled employees the replacement costs can reach 150 per cent of the departing employee's salary. If good employees who relocate are not automatically lost by the firm, but instead move into telework, these productivity losses and search costs of finding a replacement can be avoided.

Rane (2011) reviewed the impact of telework in the ability of firms to retain workers. They found that more than two-thirds of all businesses who had implemented flexible work practices believed it helped with recruiting and retaining workers. In both cases the rate was slightly higher among larger businesses.

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<sup>2</sup> <http://www.referenceforbusiness.com/encyclopedia/Eco-Ent/Employee-Turnover.html>

**Chart 4.5: Impact of flexible work policies on recruitment and retention**



Source: Rane 2011

### Case study: Booz Allen Hamilton

Booz Allen Hamilton (BAH) is a leading strategy and technology consulting firm. In 2004 BAH formally recognised the concept of telework in to the existing flexible work arrangement. A six month telework pilot started in 2005 with the aim of building employee and management consensus around the value of telework. The feedback from the pilot was overwhelmingly positive with managers becoming ambassadors for the overall program.

Employees reported a large reduction in time spent commuting from the home to the office, then again to client locations. Regular teleworkers showed an increase in productivity. This is because only client related commuting was required. The time saved from travelling to the office was instead spent on work resulting in an increase in output. BAH also found they were able to retain key personnel on long term client engagements by offering telework options that suited individual needs. For example, management often approved permanent telework for staff who needed to move interstate to join their partners. In addition, permanent and part-time telework options were offered after maternity leave had been exhausted leading to greater female employee retention.

Source: Commuter Connections 2008

### Absenteeism

Telework does not stop the incidence of illness among a firm’s employees, however it may lead to a reduction in illness and other personal leave-related time off work (Dixon 2003). In particular the availability of telework in times of mild illness, where the worker has a mild cold or similar illness that does not have a substantial impact on their productivity, means

an employee may continue to work from home through an illness. This approach also avoids the spread of the disease to other employees in the office through keeping the infected employee separate from healthy employees.

Lister (2011) has undertaken a comprehensive analysis of the potential benefits of telework in Canada, were it exploited to its full potential. This makes it an important study for reviewing these benefits. Lister (2011) estimates that 15 per cent of all personal leave taken is not due to illness of the employee, but is related to the need to care for an unwell family member. However in these cases the employee is still perfectly capable of working. In these cases an employee who teleworks would be able to work around these caring needs and retain close to full productivity.

Telework also leads to a reduction in small periods of time that employees spend away from work to manage personal affairs. Telework enables flexibility in working hours that means an employee who takes time off during standard operating hours to rearrange their working day without losing work time. Without this flexibility, Doherty (2000) reports that most teleworkers would take leave or simply cut short their working day to manage personal affairs when required (see Table 4.5).

**Table 4.5: How teleworkers would manage personal needs if they could not telework**

Approach	Rate (%)
Take personal leave	33
Take sick leave	17
Leave work early	14
Have someone else do it	13
Go to work late	11
Leave, then return to work	9
Take leave of absence	8

Source: Doherty 2000

## Business resilience

During emergencies telework can provide businesses with the ability to remain open and productive (ATAC 2006). This applies in cases where employees are telework-ready, whether or not they have formal telework arrangements in place. Examples of situations in which telework may provide business resilience against unplanned shutdowns include:

- Epidemic threats—for example, during the H1N1 epidemic in 2009 individuals were quarantined if they were thought to be at risk of having the virus, even if they showed no signs of illness. Telework would enable such workers to remain productive.
- Natural disasters—for example during the January 2011 floods in Brisbane, those who normally worked in the CBD were prevented from doing so because of the emergency shutdown of the flooded regions, however many of these workers lived in areas that were unaffected. Telework capability could have meant many in desk-based roles could have worked from home as an alternative, avoiding the large productivity loss to businesses that resulted.
- Mass public transport failures or strikes affecting network operation—when it is difficult for the employee to access the workplace owing to larger than usual transport

bottlenecks, it may be more convenient, and less likely to lead to employees taking time off because of transport issues, if the workplace can travel to the employee.

- While inclement weather events such as snowstorms are less relevant to the average Australian business, telework can facilitate ongoing work during times where weather has made it impossible to access the workplace. Wittman (2011) notes the example of snowstorms in Washington and the ability of government workers to continue providing services remotely.

Business resilience through telework can also relate to the ability of a business to survive and do well during economic downturn. While it is not what is typically meant in such cases, Bourke (2011) notes that flexible work arrangements, including telework, can be utilised as an alternative to letting staff go. Telework represents an improvement in working conditions to many, as well as an effective pay increase as the cost of travel to and from work is avoided (see Section 4.2 below), meaning it can potentially be used as a means of rewarding employees for their efforts when times are tough and pay increases are not viable. In the US many businesses took steps to reduce labour and operational costs during the GFC, and of these 19 per cent reported that they did so through increasing telework rates (Galinsky 2009).

This use of telework to facilitate business resilience during tough economic times may be particularly useful in a case such as Australia's. Australia has effectively been at full employment for some years, and the tightness in the labour market meant that firms did not want to lose talent to staffing cuts and run the risk of facing renewed shortages during a recovery. Allowing telework and the staff retention benefits it brings (see above) as an alternative to staffing cuts may assist with this.

#### Case Study: AT&T

In 1992 AT&T formally implemented the AT&T Employee Telework Initiative. As of 2006 approximately 35 per cent of employees had selected to work from home more than six days a month, with 55 per cent of employees using at least one form of telework with less regularity.

The increased business resilience that telework provides was important for AT&T in 2005 in the aftermath of Hurricane Katrina. While the city was heavily damaged and inaccessible, AT&T service response times were maintained as the majority of home-based work sites were unaffected by the hurricane.

Source: Tools of Change 2001

### General increases in productivity from workers

Baard (2010) notes that teleworking employees are commonly more productive than they would have been were they still in the traditional office. There are a variety of reasons identified for such productivity improvements:

- The home office provides a quieter and more focused work environment, with fewer interruptions.
- Teleworkers have the freedom to work in relative comfort, for example they are able to wear casual clothing when not required to participate in video or face-to-face meetings,

and some elements of the home office can be set up to suit themselves (such as setting heating and cooling to suit personal preferences rather than what all workers on average would prefer).

- The potential for reduced exposure to negative office politics that can cause time-consuming interruptions to the work day, and the negative feelings towards the office that this may create.
- Reduced stress from avoiding the hassles of traffic and the daily commute, and an increased sense of job satisfaction, feeding into an employee's feelings towards their employer and their desire to do well for the organisation.

Productivity benefits may also be created through teleworkers spending more time of each working day doing actual work. While it is the employee and not the employer who benefits from avoiding the commute to and from the office, the employer may benefit if the teleworker chooses to use some of this time to work (rather than just increasing total leisure time). If an employee uses even some of the travel time avoided as time to undertake additional work, they will increase their total time spent doing work for their employer, and therefore the total amount of work done.

Lister (2011) reports that in Canada it is estimated that teleworkers give back around 60 per cent of the time they would otherwise have spent commuting as time spent doing work. Stafford (2011) reports that, on average, Australians spend 27 minutes commuting to work each day, although for many Australian workers living in major cities this time can be substantially longer. The Australia Institute (2005), reported an average 50 minute round trip for full-time Australian employees. Based on this estimate, if Australians were to put 60 per cent of the round trip travel time avoided from telework back into work, they would on average work 30 additional minutes per day. For a full-time teleworker, who works the full 229 eight hour days per year<sup>3</sup>, this would add up to an additional 8.5 days of effective work time per year.

Use of telework, and in particular the ICT infrastructure that enables telework, provides scope for collaboration across a wider range of business sites, utilising a wider range of talent, knowledge and experience than what is immediately visible to the manager in a traditional workplace (Riswadar 2009). In the Broadband Commissions second update, the United Nations (2011) notes that ubiquitous broadband access is important in facilitating such collaborative work if all parties are to have equal ability to contribute, and that this has profound possibilities in knowledge-based industries. This is one way in which the NBN will help to increase the benefits that are achievable using telework.

While the range of potential productivity benefits available from telework is large, the value of these productivity increases is notoriously hard to quantify (Doherty 2000). Difficulties arise as the magnitude of benefits depends upon a range of factors, including that typically teleworking employees are compared to their in-office counterparts, and one group may have been more or less productive before the introduction of telework. These are also typically based upon perceptions, particularly survey data, rather than hard evidence.

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<sup>3</sup> Estimated as all business days (260 weekdays less 11 statutory holidays), less four weeks of annual leave.

### Case Study: Dejay Signs

Sign-writing is a digital art-based business, with designs done in a computerised fashion. The files produced can be many megabytes in size, taking some time to upload and email, or download at the other end.

Dejay Signs in Midway Point, Tasmania was one of the earliest businesses to connect to the NBN in 2010. Prior to connecting to the network the business owner, David Jones, made multiple trips to client sites to deliver soft copy files on a compact disk, or pay to send a disk by courier. The high speeds delivered from the NBN enabled the business to transfer files online, with downloads and uploads taking seconds. This speed improvement has enabled Jones to avoid many time consuming trips and the expense of couriers, and to deliver work to clients in a more timely fashion.

Source: NBN Co Case study

#### 4.1.3 Savings

There is an initial outlay involved in establishing telework, however once this has been undertaken savings can be high—one study suggests companies will save \$2 for every \$1 invested in equipment and extra phone lines for the teleworking employee (Mallia 2000). These savings are driven by not just the number of individuals undertaking telework, but the frequency with which they work from home.

Some potential sources of cost savings to the employer from telework are detailed below.

##### Office space

Telework leads to a decline in the rate of work being undertaken in the main office. A reduction in the number of workers in the office means there is a reduced need to provide office infrastructure, including phones, computers, desks and printers. However some of these expenses are simply transferred to the home office, meaning that there may be only a small dollar value attached to these for the employer if home office costs are subsidised. This is discussed in greater detail in Section 6.4.

As the rate of telework increases scope to reduce the office size also emerges. Reducing the office floor space can help the firm to save on office rental costs and, if those who move to telework were allocated parking spaces, there may be savings achievable through cut backs to these.

The size of these real estate benefits is potentially large. For example, Riswadkar (2009) reports that with remote working as part of its business plan, AT&T was able to increase cash flow and reduce its real estate costs by between \$3000 and \$5000 per employee per annum. Commercial office rental rates are quite high in some Australian cities (see Table 4.6), meaning that the ability to reduce rental expenses is potentially quite lucrative, especially to businesses located in cities with higher rents such as Perth and Sydney.

Table 4.6: Office rents, Australian capital cities

City	Cost (US\$/sq foot/yr)	Global city ranking
Perth	59.29	35
Sydney	53.29	42
Brisbane	40.46	74
Melbourne	36.43	85
Adelaide	31.53	107
Canberra	30.57	111

Source: CB Richard Ellis 2010

### Avoided utility expense

As employees move out of the main office there are savings through reduced utility – electricity, gas and water—expenses. Electricity expenditure in particular falls due to lower air conditioning and lighting expenses, and the reduced consumption of power for operating computers and other equipment (Meyer 2000). Benefits are derived in two different ways:

- Some benefits are realised as individuals move into telework and their personal consumption no longer takes place. Most computing energy is saved through this, as is consumption of energy for lighting of individual spaces (particularly offices).
- Some benefits are realised as the size of the office is reduced in response to increasing rates of telework. This is how savings from reduced air conditioning consumption are realised, as well as savings from reduced lighting needs for communal spaces.

These energy savings may be marginal, however, as they do come at a cost of increased energy consumption in the home office. If the employer subsidises the cost of work-related energy consumption at home there may be very little cost savings. However Luhr (2007) notes that home offices are more energy-efficient than commercial offices, and so even if the full home office utility bill is covered by the employer the saving is unlikely to be completely cancelled out.



### Case Study: Sun Microsystems

Sun Microsystems introduced their Open Work program in 1994 and as of 2009 some 20,000 employees were participating. More than half of the firms' work force works from home at least two or three days per week, and this has unlocked a number of benefits to Sun in terms of cost savings.

In 2007 alone the increased rate of telework enabled Sun to reduce its real estate holdings by more than 15 per cent, with associated savings of approximately \$US68 million. The initial and annual workplace expenses are 30 per cent lower for teleworking employees compared to their conventional employees, and even higher for those who telework full time.

Sun estimates it avoids some 5400 kilowatt-hour in electricity consumption each year per employee that works from home two or three days per week. This has helped the firm to reduce its carbon footprint by 31 000 tonnes of emissions.

Source: Riswadkar 2009

### Office decentralisation

A less commonly discussed source of cost savings from telework is that of office relocation. Once a certain critical mass of telework is reached it becomes possible for the head office to be moved to a less central location with lower rents.

Current models of employment tend to favour a business placing their offices in the CBD or a similar transport hub, in order to make it as convenient as possible for their employees to reach the office. However as the rate of telework increases this becomes less of a concern, and there may be scope for business to relocate to a regional area. The location is unlikely to be too remote as the site remains constrained by accessibility to those staff who continue to work in the commercial office. For example, while relocating the office from the Brisbane CBD to Ipswich may be feasible and not too inconvenient to most staff, it would not be possible to expect all these staff to relocate to a rural town.

Office decentralisation is a more unusual telework benefit as it relies upon a fairly high rate of full-time telework. Even in the case where 100 per cent of employees were to telework two days a week, the office would continue to need to be centrally located for those other three days when employees are commuting.

It is also a benefit of telework not commonly realised as typically this would come at the cost of service delivery or productivity due to the lower level of internet and other communication service delivery in regional parts of Australia, and even in some suburban areas. Historically decentralisation has involved dropping down the technological scale, however the ubiquity of the NBN—the fact that it will provide a consistent level of service across Australia—means that such relocation would no longer come at the expense of internet services and the associated decline in service quality and productivity.

## 4.2 Employees

There are a wide range of benefits associated with telework for employees.

### Cost savings

Individuals are able to derive a range of cost savings through telework (Riswadar 2009):

- Avoided fuel expenses and vehicle maintenance expenses for those who drive to work, or avoided public transport expenses for those who take public transport.
- Avoided clothing and dry cleaning expenses.
- Reduced cost of meals as the employee is more readily able to make something at home rather than go out for lunch.

By far the most substantial costs avoided are those relating to travel avoided. This is in terms of both the dollar value of expenditure and the value of the time that is not spent commuting each day. The actual time and cost savings derived by each individual teleworker will be a function of their particular trip to work, and how often they telework. An employee who teleworks full time will derive much higher cost savings than one who teleworks only one day per week.

Even with less frequent telework, the cost savings to the employee can be high. Cisco and Telework Exchange (2011) estimate that allowing an employee to telework two days a week is equivalent to giving them a US\$3439 annual raise due to the costs avoided.

### Workplace flexibility and work/life balance

Telework provides a certain level of flexibility for employees to manage their working hours around their workload and family or other needs. This is particularly useful to those employees who may have dealings with clients or suppliers in different time zones and for whom conventional hours may be ill-suited to the needs of their role.

#### Case Study: BMW Germany

BMW's international project teams collaborate across a number of time zones, and telework by around 2000 staff members has allowed these teams to collaborate more effectively. By working from home and utilising flexible hours to suit the needs of their role, BMW employees in Germany are able to increase their office time overlap with colleagues in the USA or Asia by up to 30 per cent. This has led to faster and more efficient completion of tasks, with BMW estimating this increase in efficiency as up to 16 per cent.

Source: RTA 2009

However this flexibility is somewhat limited. The teleworker does still need to be readily contactable by colleagues and others during standard business hours when they are working (Byrne 2005). Additionally, while there is some flexibility to arrange work around personal needs, organisations such as Telework Australia generally recommend that the

employee should not be using telework as a form of free childcare, as this creates a potentially large distraction from their work.

Closely related to workplace flexibility is the idea that telework facilitates work/life balance improvements. By avoiding the time cost of travelling to and from the office, the teleworker has greater leisure time than previously, and avoiding rush hour also removes the stress of commuting. Additionally the teleworker may be better placed to select the times at which leisure is taken, arranging some work hours around leisure activities. Flexible work arrangements that facilitate improved work/life balance have a significant positive impact, with better physical and psychological health, and lower levels of stress (Working Families 2011).

However the evidence is somewhat conflicting on how great this benefit may be. While organised teleworkers should have no difficulties keeping work and non-work life separate, some individuals may find that conflict between these roles presents challenges (Mallia 2000). This 'life blurring' is discussed in more detail in Section 5.2.

### **Job satisfaction**

As well as facilitating an improvement in work/life balance, avoiding the stress of commuting may lead to an employee feeling overall more positive towards their work and their employer. Increased job satisfaction from telework may also be driven through the sense of empowerment that an employee may feel in that their employer trusts them enough to not feel the need to constantly look over their shoulder to ensure they are working hard. This sense of empowerment is consistently shown to be one of the highest contributors to job satisfaction (Lister 2011).

Being granted flexibility in working arrangements is generally perceived by teleworkers as an indication of their value to their employer (Baard 2010). Feeling valued by one's employer is often associated with a more positive perspective on the part of the employee. As a result those who are granted the ability to engage in flexible work practices, including telework, are more committed to their employer and enjoy better relationships with their colleagues (Working Families 2011).

### **Workforce participation and ability to participate to a higher level**

It has long been recognised by the European Commission that telework is a practice that may permit more people to enter employment by working from their homes (Visser 2008). The adoption of telework has enabled many in EU countries to participate in the labour force in a way that would not be possible if the option to telework. In the SIBIS General Population Survey 2002, around 16 per cent of teleworkers in the EU agreed that they 'could not be in paid work at all' without the option to telework, and 26 per cent agreed that they 'would have to reduce my working hours per week' if they were unable to telework<sup>4</sup>.

Some particular groups in society that may have greater potential to be involved in the workforce under telework are:

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<sup>4</sup> <http://www.sibis-eu.org/statistics/data/4-37.htm>. Statistics indicate those who "agreed completely" and "agreed somewhat" with these statements.

- People with a disability—some individuals with a disability are quite mentally and physically capable of performing the responsibilities of a job, however may face accessibility issues with office buildings and transport (Baard 2010, Georgetown Law 2010). Such individuals would be well-positioned to move into the workforce through telework.
  - There may be a need for increased flexibility of hours in such cases however as long hours can be physically difficult for some disabled persons (Doherty 2000).
- Those who are providing care for others, including mothers of young children, may have difficulties working full-time hours in an office. Even where carers have been in the workforce, many of them have performed roles below their skill level because it gave them the flexibility needed to balance work and caring responsibility (Bourke 2011). Use of telework, combined with some ability to work unconventional hours, will provide the required flexibility to enable these carers to fully participate in the workforce.
- Some individuals who live in regional or remote areas have poor job prospects because of where they live, but for various reasons they may not have the ability to relocate to a larger population centre where their job prospects may be greater. Telework would enable these individuals to work for organisations based in major cities without needing to relocate (Baard 2010).

This scope for telework to allow individuals to participate in the workforce fits in with the assessment in the UN (2011) report that broadband is an economic equaliser which reduces many forms of economic disadvantage when adopted. Statistically those who are disabled, are carers or live in regional Australia are more likely to be at a socioeconomic disadvantage, and the availability of telework may assist in reducing this gap.

In the case of regional employees in particular, the rollout of the NBN and the reduced digital divide that will result is expected to increase their scope to participate in telework. Particular ICT applications may also assist. For example, email and text-based instant messaging services have substantially improved the ability for the deaf to communicate at a distance, and may be utilised to improve their ability to participate in telework.

### **Flexibility of location**

Just as those who already live in regional areas may have more scope to move into the workforce through engaging in telework, those living in urban areas due to workforce necessity may be able to utilise telework to choose to live in a more remote location. Under traditional workplace arrangements, individuals must live within a reasonable commute of the workplace. This places a constraint on their place of residence. However if these city dwellers move into telework these constraints are removed and they may be able to choose to live in a more regional area (Baard 2010).

Historically, the poorer average performance of the internet services available in regional areas limited access to this benefit. However under the NBN the ubiquity of the network will allow true flexibility in choice of residence, as concerns about regional service provision will be a thing of the past.

It is important to note that this benefit is limited to those who telework full time. An employee who teleworks some days of the week and comes into the office on other days will still need to live within a reasonable commuting distance. This makes flexibility of location a somewhat smaller potential benefit of telework.

#### 4.2.1 Employee perceptions

Baard (2010) reviewed teleworker perceptions of the benefits of telework in South Africa. The survey asked them to identify how significant they perceived each of a number of potential benefits to be in their actual experience.

Overall benefits regarding flexibility and productivity were rated high by these workers, as was the level of job satisfaction. However some benefits that are identified widely in the literature, such as increased time spent with family and reduced need to take sick days, were found to be less substantial.

**Table 4.7: Employee perceived benefits of telework**

Benefits	Limited extent (%)	Neutral (%)	Great extent (%)
Less distraction	6.4	7.9	85.7
Improved productivity	1.6	12.9	85.5
Greater flexibility in work arrangement	6.4	9.5	84.1
Increased job satisfaction	9.5	7.9	82.5
An improved work-life balance	14.5	9.7	75.8
A greater loyalty to the organisation	11.3	16.1	72.6
Increased morale	6.4	22.2	71.4
Decreased stress levels	14.5	22.6	62.9
Reduced monthly expenses	23.8	25.4	50.8
Increased time spent with family	17.5	36.5	46.0
Decreased sick days	20.6	33.3	46.0
Increased number of training opportunities	44.4	42.9	12.7

Source: Baard 2010

## 4.3 Societal and economy-wide benefits

### Traffic congestion

Traffic congestion is a problem in many of Australia's larger cities, with substantial costs accruing due to the time cost of individuals sitting in traffic jams as well as the actual costs in terms of vehicle expenses. In Australia 87 per cent of the population lives in urban areas, and 64 per cent in capital cities (Department of Sustainability 2011), worsening the issue of traffic congestion. A 2007 Bureau of Infrastructure, Transport and Regional Economics (BITRE) report estimated the cost of congestion in Australian cities to be \$9.4 billion annually. Based on this figure, Access Economics (2010) calculated the total savings from congestion costs avoided to be approximately \$470 million annually. ATAC (2006) reports

the results of a UK study which found that in the year 2000 the net public loss to the UK economy of traffic jams was £20 billion annually.

Telework leads to reduced road congestion as those who are no longer commuting each day stay off the roads during peak periods. The Telework Coalition estimates that 'for every one per cent reduction in the number of cars on the road there is a three per cent reduction on traffic congestion' (Fuhr 2007), however the basis for this is unclear and as such the actual benefit may be lower. The potential for savings from road congestion avoided are therefore substantial. A hypothetical 10 per cent increase in the rate of telework in the US would result in a 20.1 per cent decline in congestion, and the savings from some cars being off the road altogether plus those who still commute but spend less time on the roads due to reduced congestion would total \$12.7 billion in time and fuel expenditure. After factors such as population are accounted for, these figures are approximately equivalent to Access Economics 2010 estimates for Australia, where reduced time and fuel expenditure savings were found to be close to \$810 million.

The actual level of travel and traffic congestion avoided may not be the same as the amount of commuting travel avoided (Dixon 2003). This is because there may be some increase in non-work travel. For example, without telework parents may have dropped their children off at school on the way to the office, however when they are no longer commuting this would become a discrete trip. While this is noted as a possibility there seems to be little evidence that suggests telework has actually led to increases in such trips.

As levels of congestion abate with increased telework, there is less of a need to increase the capacity of the road network in order to maintain or reduce overall congestion. Reduced usage also slows the rate of decline of the roads, slowing the need for maintenance. This leads to savings for government in the form of avoided infrastructure expenditure, and may also apply to the public transport network as fewer workers use public transport to travel to and from work and capacity issues ease. In reality these are more likely deferred rather than avoided expenses, as eventually weather and other factors will require maintenance expenditure, while traffic levels are likely to again reach the point where capacity increases are needed.

The reduction in congestion may also result in fewer road accidents as the number of vehicles on the roads declines. Lister (2011) estimates the costs of motor vehicle accidents and injuries that would be avoided if all employees in Canada in roles that were amenable to telework (estimated at 43 per cent of the workforce) were to telework two days per week on average. At a rate of 5.2 fatalities and 363 injuries per billion vehicle miles travelled, and a cost per fatality of \$CA17.7 million and \$CA92 000 per injury, this rate of telework may lead to a reduced burden of disease cost from motor vehicle accidents of \$CA37.5 million. This value does not incorporate any avoided costs of damage to vehicle, inconvenience of temporary loss of vehicle or time costs involved in getting vehicles repaired.

### Case Study: Sefton Metropolitan Borough Council

This council conducted a trial of telework for employees whose journeys to work took them through the most congested part of the borough. 19 employees used telework for a 12-month period, for a total of 294 days worked from home.

Employees kept detailed travel logs of their travel patterns and how telework affected these. Overall the pilot saved 22 000km in car travel and approximately 1 900 litres of fuel. The environmental benefit of this small pilot program alone was about 4.5 tonnes of CO<sub>2</sub>. This is equivalent to the average total consumption of one adult in 2006<sup>5</sup>.

Source: RTA 2009

## Regional development

As discussed previously, telework may create scope for increased employment of those living in regional areas. It is known that employment opportunities are fewer in regional areas, and this is part of the reason why Australia is highly urbanised, with 87 per cent of population living in urban areas and 64 per cent in capital cities (Department of Sustainability 2011).

Telework's capacity to help bring jobs to the regions may help to reduce population flows from regional areas to capital cities, reducing pressures on major cities which is a concern for future population growth (Department of Sustainability 2011). If more of the population of regional communities stay, and especially if individuals living in major population centres were able to move to regional areas due to telework, it would provide greater momentum towards the development of regional communities in Australia.

The NBN will be an important catalyst in unlocking these regional developments. Historically internet services in regional parts of Australia have lagged behind those in urban areas in terms of speed and reliability, limiting the potential for telework in regional areas and placing regional workers at a disadvantage. However the fibre and next generation fixed wireless and satellite services provided by the NBN will address both of these limitations for regional workers. The ability to telework using the NBN is seen by some experts as having high potential for increasing the productivity of SMEs in regional areas (Estherby 2011).

## Reduced carbon footprint

Reductions in both electricity consumption in the commercial office and motor vehicle use from avoided travel mean telework leads to lower greenhouse gas emissions. In particular, the greenhouse gas emissions avoided from reduced motor vehicle use may be substantial. The environmental merits of telework are highlighted by the role of telework in amendments to the US Clean Air Act, which specify that companies with 100 or more

<sup>5</sup> <http://timeforchange.org/mitigate-global-warming-effects-temperature-simulation>

employees should encourage telecommuting as one way of combating pollution (Riswadkar 2009).

The volume of greenhouse gases abated by avoided commuting is potentially large. Fuhr (2007) reports that use of personal vehicles accounts for 30-50 per cent of greenhouse gas emissions, and so if 10 per cent more of the US workforce could telework full-time (avoiding approximately 10 per cent of all commuting), emissions of greenhouse gases would fall by 45 million tonnes each year. Cisco and Telework Exchange (2011) estimate that if all full-time wage and salary workers in the USA teleworked two days a week (avoiding approximately 40 per cent of all commuting) they would avoid 143 million tonnes of emissions annually. Deloitte Access Economics estimates, based upon the average commuting time from the Australia Institute (2005) and National Greenhouse Accounts (2009) estimates that consuming one litre of fuel produces CO<sub>2</sub>-e, an equivalent rate of telework in Australia would avoid 2.5 million tonnes of emissions annually. This is significantly higher than Access Economics (2010) estimates which indicated that around \$320 000 tonnes of CO<sub>2</sub>-e could be avoided annually with a 10 per cent telework rate. Such a difference is reflective of the lower telework rate assumption as a lower telework rate also reduces the flow on impacts of emissions avoidance from improved traffic flow.

#### Policy implications: Benefits of telework

The benefits of telework are wide-ranging and accrue to the employee, employer and wider society.

The size of potential benefits of telework for employers is very large, and has the potential to generate large cost savings and productivity gains to business. The size of potential employee benefits is also large and these can be used by employers to encourage their employees into telework.

Conversely, workers who wish to telework can use the nature of benefits to their employer to build a business case for why the organisation should adopt telework.

Some of the society-wide benefits in particular can help progress towards other government objectives, such as increased workforce participation, regional development and reducing pressure on cities, and moving Australia towards a low-carbon economy.

There are also benefits to government budget bottom lines in the form of avoided or delayed expenditure on transport infrastructure.

Intelligent execution of policies to encourage telework adoption would help to unlock these benefits, working towards several desired policy outcomes simultaneously.



## 5 Challenges in adopting telework

The benefits detailed above suggest a compelling case for the widespread adoption of telework. However this positive case is not yet borne out by the statistics on the current level of telework. This shortfall may be attributed to a number of obstacles that reduce enthusiasm for and adoption of telework, which are discussed below.

### 5.1 Employer

#### Technical feasibility

One concern from employers is that the lack of high speed, high bandwidth internet services, and the possibility for network slowdowns in the event of congestion, will mean that teleworkers cannot work as productively in the home office as in the commercial office. The lack of access to appropriate ICT infrastructure has been identified in the literature as a barrier to telework (Scholefield 2009).

Not all employees have access to fast and reliable internet services in their homes, with some residing in network black spots, or living further away from the telephone exchange and therefore receiving slower service speeds. If a teleworker is unable to receive internet service in the home office that is of comparable quality to that received in the commercial office, they will be unable to retain their existing levels of productivity after moving into telework. Even in organisations where telework is available some employees may be excluded from the potential pool of teleworkers because of the technical limitations of their home internet connection.

#### Cultural issues and trust

ATAC (2006) found that cultural resistance to telework from both managers and in-office workers was the most important barrier currently in place. Some of this resistance may be simply driven by business cultural factors, where management is traditional in work practices and therefore naturally resistant to change (Allen Consulting Group 2011), but some may be due to perceptions around telework.

There is a lack of trust from management in many organisations that teleworkers will retain the same level of productivity without active supervision. This is something borne out in interviews with managers, even where they indicate that they support telework (Scholefield 2009). These managers, as well as other in-office employees, have a perception that teleworkers do not work as hard, owing to the lack of constant supervision and because there are more potential distractions at home, such as television, family members or pets.

Whether or not these perceptions are borne out by reality is unclear. Certainly some studies have indicated that telework leads to an increase and not a decline in productivity of the employee (see Section 4.1.2). The question of whether a teleworker is more distracted when working from home is likely to depend upon the individual and the nature of both their home and traditional offices.

## Communication and management

Traditional communications and management styles will need to adapt to the introduction of telework. Management styles have historically been based around the supervisor being able to keep watch on their employees however this is not possible with telework. As well as having a means of ensuring the employee is continuing to work, there will be a need to have formalised structures around workload management, as telework means it is less obvious when an employee is over or under worked.

It is important that supervisors and colleagues understand the telework arrangements, including any special arrangements around flexible working hours and the like. In particular, in-office staff need to understand that the teleworker is 'working from home' rather than 'at home but available to talk' and to treat calling them exactly as speaking face-to-face in the office (Meyer 2000). Telework, and a perceived reduced capacity for quick conversation about small issues, may lead to an overall decline in communication across staff if steps are not undertaken to maintain incidental communication through for example instant messaging.

Management may have concerns about the introduction of telework owing to the disruption costs involved in changing to new management models. While this may be less of a concern to some businesses, not all organisations have the same ability to introduce change effectively. It is important that steps are taken to minimise the disruption of introducing telework to business.

## Costs

It can be expensive to introduce telework to a business, particularly if the firm does not already own some of the critical infrastructure (for example, laptop computers, or a secure network that enables employees to access file servers remotely). There may also be some temporary productivity costs while modes of operation are adjusted around the new telework arrangements.

Most of the costs of telework are incurred in setting up telework for the first time and incurred only in the first year (RTA 2009). Some of these costs may also be shared with the employee, with some equipment that could not be readily returned to the firm (such as internet connections) likely to be cost-shared in accordance with what proportion is used for work compared to personal use. However the fact that the costs are incurred up-front, while the benefits accrue over many years, means that the benefits relative to costs can be skewed in management opinion.

## Security

Security of IT systems and sensitive business information is a legitimate management concern with telework. While the risk of malicious security breaches may be slightly higher because of the increased transfer of files over the internet, and the fact that security in the teleworker's home is likely to be lower than the main office (Whiteman 2006), in the literature this is not the primary security issue for most organisations. Instead, the greater security risk of telework is inadvertent security breaches, generally through carelessness.

In-office security protocols, such as password-protection of work-related computer profiles and blocking of potentially threatening websites (e.g. those with malware) are likely to be replicated across to the teleworker's computer. However if these policies are not followed in the home office then there is an increased risk of the employee inadvertently downloading viruses or worms which may then penetrate the corporate network through a remote access point.

File storage and transfer is also something of a security risk in a telework environment. The security and confidentiality of files may be compromised if they are transferred to the office using an unsecured internet connection, or if they are saved to insecure and non-encrypted physical storage such as CDs/DVDs or unencrypted USB (Riswadkar 2009). There is a risk that carelessness by teleworkers in IT procedures may negatively impact upon the business.

### 5.1.1 Employer perceptions

Scholefield (2009) conducted a survey of employer perceptions of telework, positive and negative. The findings of this survey are presented in Table 5.8. Overall technological problems (incorporating technical feasibility and security) were the most commonly identified potential downside of telework, followed by employee isolation that would negatively affect performance. The impact on the business bottom line was the least commonly cited potential downside of telework.

**Table 5.8: Employer perceptions of telework (%)**

<b>Teleworking will:</b>	<b>Strongly agree</b>	<b>Slightly agree</b>	<b>Not sure</b>	<b>Slightly disagree</b>	<b>Strongly disagree</b>
Improve preferred employer status	27	49	15	7	2
Improve employee satisfaction	36	39	15	7	3
Allow possibility of technological problems that negatively impact productivity	20	48	15	13	5
Create physical isolation that will negatively affect performance	15	46	13	18	9
Result in workers working just as hard even though out of sight	21	33	30	12	3
Create difficulty in performance managing teleworkers	10	41	6	33	10
Improve environmental responsibility and corporate social responsibility	8	43	24	19	6
Lead to more distractions for workers, being at home	9	41	21	20	9
Affect team performance negatively	8	29	14	33	15
Increase company costs overall	2	18	33	35	15

Source: Scholefield 2009

Lafferty (2000) also reviewed business perceptions of the problems with telework, but this survey was focused on businesses that were actually engaged in telework. While data security again rated highly, so too did cost barriers, outranking many problems with telework that potential teleworking bosses thought more important. However overall the

rate at which problems with telework was identified was lower among these teleworking bosses, with no problem rated as 'highly important' by more than 20 per cent of all those surveyed.

## 5.2 Employee

### Isolation

Telework involves potentially long periods of working alone, and more sociable employees in particular may be challenged by this individualised approach to work (Baard 2010). In particular, working alone for extended periods may reduce the ability of teleworkers to interact effectively with their colleagues in the office, as the loss of face-to-face contact reduces the ability to understand tone and non-verbal signals.

There is a risk that this loss of effective communications may affect the morale of the teleworker and how they feel towards the organisation. Businesses should always vet potential teleworkers carefully to ensure that it is only those who are likely to be able to cope with this new arrangement and continue to be effective are moved into telework.

### Exclusion from workplace decisions

Dixon (2003) notes that a Queensland University of Technology survey found some telecommuters believed that their co-workers seemed reluctant to contact them at home, despite being told about their availability to be contacted when needed. This reluctance to contact the teleworker led to them being excluded from workplace decisions in cases where they would have wished to be included.

This finding is indicative of a broader challenge to telework, namely that communication with a teleworking employee can become poor using traditional means of communication. This may impact their ability to work efficiently with their colleagues. Further, knowledge gaps (owing to their exclusion from conversations and decision-making processes) may arise with teleworkers, which may be problematic at a later stage. Appendix B provides detail about the potential for ubiquitous high capacity broadband to vastly improve an organisation's capacity for high quality videoconferencing and use of existing collaborative software tools more broadly.

### Inhibited career progression

Some employees are concerned that seeking to or agreeing to telework may inhibit their career progression. This may occur because of reduced positive peer pressure and ability to compare productivity against colleagues, as well as fewer opportunities to engage in networking activities that may lead to advancement (Baard 2010). By missing these opportunities the teleworker may have an inadequate understanding of what the performance requirements of higher-level roles are, and what steps they individually need to take in order to progress their career.

There are also perceptions that telework leads to an 'out of sight out of mind' mentality when it comes to promotions and other opportunities. For example, some believe the best projects may go to more visible workers in the office (Meyer 2000). Others have suggested

that, owing to this loss of opportunity, two years is the limit of telecommuting stints without negative career repercussions (Mallia 2000).

Regardless of whether there is in fact any restriction on career progress imposed by telework, this is a key perceived downside that requires careful management by both the employer and teleworking employee.

### **Lack of technical assistance**

One survey found that over 30 per cent of teleworkers stated that a lack of support, including technical assistance, was a disadvantage of working from home (Scholefield 2009). This may occur because of a lack of priority for attending to the needs of employees who are not physically visible to IT support staff, however this is more likely to arise because they are less readily able to physically view any problems when they occur.

If they are to be successful at telework, an individual employee must be somewhat autonomous and knowledgeable about home office technology. Remoteness from IT support staff means that a teleworking employee simply cannot have the same level of IT support as in the traditional office (Mallia 2000), and the teleworker needs to appreciate this and take steps to work around it where possible.

### **'Role blurring' between home and work life**

The absence of physical separation between work and personal life can lead to difficulties for some employees with keeping the two mentally and emotionally separate (Baard 2010). The same 'always on' technologies that facilitate telework can also make it difficult to leave behind outside of work hours and may cause conflicts in how to allocate time (Meyer 2000), while colleagues and clients may have difficulty appreciating the distinction between work and leisure time, utilising the constant availability at inappropriate times.

Mallia (2000) describes this as 'role blurring', the overlapping in time and space of the different roles performed in life. Because the employee is always contactable and the office readily available, the employee may face more conflicts in how to allocate between work and leisure time. This overlap may place a stress on family life if the teleworker allows work to encroach upon leisure time (Visser 2008).

If not carefully managed, this 'role blurring' has the potential to not only cancel out the work/life balance benefits achievable under telework, but to cause a net loss on balance.

## **5.2.1 Employee perceptions**

Baard (2010) also considered the individual challenges and what issues current teleworkers in South Africa faced. The results of this are presented in Table 5.9. Overall feelings of isolation, lost opportunity for career progression and increased stress on the family through 'role blurring' were not widely cited by this group of teleworkers. However an overwhelming majority noted that as a result of telework they were working longer hours, reducing some of the work/life balance gains.

Table 5.9: Challenges of telework

Challenges	Disagree (%)	Neutral (%)	Agree (%)
Working longer hours	14.8	19.7	65.6
Different telework team culture as opposed to larger organisational culture	22.6	35.5	41.9
Lack of organisational assistance in physical home office set-up	24.2	48.4	27.4
Lack of organisational support for purchase of home office equipment	41.9	33.9	24.2
Change in trust relationship with superior	50.0	27.4	22.6
Required to resolve own technical issues	50.0	27.4	22.6
Problematic network connectivity to organisation	66.1	12.9	21.0
Increased communication difficulties with colleagues	66.1	21.0	12.9
Lack of organisational investment in new technology	51.6	35.5	12.9
Greater stress on family	79.0	9.7	11.3
More attention required on family relationships	69.4	19.4	11.3
Irregular feedback from supervisor	64.5	27.4	8.1
Being overlooked for promotion	72.6	21.0	6.5
Feeling isolated	71.0	22.6	6.5
Lack of organisational commitment to teleworking	82.0	11.5	6.5
Output not measured	84.0	11.3	4.8
Problematic communication with superiors	85.5	9.7	4.8
Lack of clear expectations from superiors	90.2	6.6	3.3
Poor organisational facilitation of change to telework	80.7	16.1	3.2

Source: Baard 2010

#### Policy implications: Challenges in adopting telework

Many of the current constraints to telework are questions of perception rather than based on evidence, and so are surmountable.

In cases where constraints are real, they are still not insurmountable. However organisations should take steps to make sure they implement telework in an intelligent way that avoids these pitfalls and ensures the benefits are properly exploited.

Careful planning and management of the implementation and operation of telework is important for overcoming these challenges. Details of steps that can be taken to mitigate these difficulties are provided in Chapter 6.

## 6 Best practice recommendations

Chapter 5 identified a range of challenges that are currently inhibiting the ability to introduce telework, and dampening the enthusiasm for telework of both employers and employees. This section looks at some best practice recommendations in terms of ways to overcome these.

### 6.1 Overcoming employer challenges

#### Technical feasibility

Technical feasibility is a legitimate concern of employers in terms of adopting telework. This is one concern that cannot be readily overcome by business in the short-term, ongoing innovation is continuing to increase the technical feasibility and scope for telework (Rane 2011).

In particular, the rollout of the NBN over the coming years will remove technical uncertainty. The technologies used for the NBN, covering fibre, satellite and fixed wireless, are being designed from the outset to support both the high speeds and reliability required for optimal telework. This compares with existing fixed, satellite and mobile wireless networks which have been designed for internet browsing speeds and a 'best efforts' class of reliability—or in some cases not designed for broadband at all but 'retrofitted' to deliver limited forms of broadband.

#### Trust of employees

A lack of trust of employees—that they may not continue to work as hard when not under constant visual supervision, and that they may be more susceptible to distractions at home—has constrained support for telework among supervising staff. These concerns can be overcome through ensuring the risk of distraction for at-home staff is minimised, and through introducing new means of monitoring staff performance.

Organisations that advocate the adoption of telework (for example Telework Australia) promote a home office arrangement where the teleworker has a separate home office from which they work. This creates a physical separation between the worker and potential distractions, such as the television or family members. If each teleworker has a discrete home office, rather than simply working at the kitchen table or the like, the availability and temptation of distractions will be lower. It is also important that it is made clear to teleworking employees that they must achieve their required outputs, and that being allowed to telework is not an invitation to 'take it easy' (RTA 2009).

Alternative means of employee work rate need to be adopted that facilitate remote staff monitoring. While there may be ways to continue to monitor staff through time spent at desk metrics (for example times that the employee is logged on to the IT systems and active), monitoring performance by employee results rather than hours worked is likely to provide better information (RTA 2009). Output metrics should cover both delivering work

on time and to a certain standard, and use of interim deadlines and progress reports or meetings can aid the supervisor in ensuring a teleworking employee is working consistently.

It remains important that performance monitoring measures are proportional to the need. While some performance monitoring is required for employers to ensure their workers are putting in the required amount of effort, overly invasive approaches such as video monitoring or requesting regular access to the home office is not (Visser 2008).

Use of software that analyses performance metrics, such as measuring achievement of certain goals, monitoring relative staff workload and tracking time spent on revenue-earning work rather than other tasks, may provide valuable information above and beyond simply reviewing quality and timely delivery of output. Such software, if implemented, should be provided to all staff, not just those who are teleworking, and helps to move all staff towards output-based performance monitoring rather than time spent at work.

#### Case Study: Hewlett-Packard

Hewlett-Packard (HP) began offering formal telework options for employees in 1994 as a means of increasing staff retention rates. Currently 15 per cent of workers globally chose to use home offices at least once a week.

A major challenge to the introduction of telework was the management resistance encountered. Management believed that a telework system would undermine their ability to direct and monitor output and employee performance.

In response, CEO Lew Platt started telework seminars to discuss different approaches to communicate with and monitor employees. In addition, potential teleworkers are asked to complete a seven-question form asking them to establish how their work arrangement will meet business needs and asks managers how results will be measured.

Source: Remote Revolution 2009

### Management reluctance

Some management reluctance may also be simply driven by the fact that telework will incur disruption costs during introduction, and that communication will become more difficult. Concerns about disruptions can be overcome by developing a business case that clearly shows the benefits of telework to the organisation, and through gradual introduction of telework, starting with pilot programs that demonstrate the benefits and from which lessons about best practice can be learned.

Open communication channels will become more important with telework, and these can be achieved through holding regular progress updates on work. New communication devices such as instant messaging services can also be used for quick conversations much like those that would happen in the traditional workplace. The NBN rollout will deliver the capacity for high quality videoconferencing, such that collaborative systems that are already on the market and used by some large firms are likely to be used more widely. As



part of introducing telework there should be training for managers as well as employees in learning how to communicate effectively in a telework environment.

#### Case Study: Cisco Systems

Cisco Systems formalised a telework program for its US staff in 1993, making it a leader in telework and increasing its attractiveness to potential employees.

While telework has generated many benefits for the firm, one major implementation challenge for Cisco Systems was gaining management acceptance. Management had expressed concerns regarding the lack of control over project output.

Analysis of trial telework programs in San Jose found that while output deadlines were being met, there was less communication between employees, co-workers and management. This resulted in output that did not fulfil project objectives or meet management's standards. Since then, modifications have been made to the telework program so that it requires a minimum amount of physical office presence to attend meetings with management and other staff in order to ensure communication standards are maintained.

Source: Giglio, 2005

#### Security concerns

Carelessness by a telework employee may make a company's IT systems less secure. Because of the increased use of the internet for transferring files to and from business systems, the repercussions of such carelessness in the home office may be more severe than equivalent behaviour in the main office.

In larger organisations, these risks can be minimised through involving IT staff when developing the firm telework policy. For smaller organisations that may not have IT staff, consulting with an IT advisory business about how to maintain security with telework would be valuable. These experts can identify potential security issues and develop technical requirements and security provisions that counter these concerns as best as possible. Potential measures identified by Riswadkar (2009) that may be adopted include:

- Use of a virtual private network (VPN) to remotely access company servers or use of cloud computing for file storage, reducing opportunities for security breaches.
- Ensuring files are stored in a secure form, and avoiding saving files in places where they can be accessed by non-employees (for example on a personal computer that is used by others).
- Careful use of passwords for computer profiles and internet connections.

These procedures should be made clear to an employee before they commence telework. Any standard IT policies that apply in the main office should also continue to apply to the home office.

## Costs of implementation

The costs of implementing telework can be quite high, particularly if many of the ICT infrastructure requirements (e.g. laptop computers, VPN or cloud computing, security provisions) are not already in place. These can make the cost of implementation seem prohibitively high. However many of the costs of telework are incurred only in the first year of operation (RTA 2009), while the benefits continue to accrue each year that telework is in place.

In order to overcome misperceptions of the financial case for telework, a business case for telework should be established. This business case should show all the costs and benefits to the business in the first year and in subsequent years, and the decision over whether or not to introduce telework should be based upon the results of this business case. The evidence provided one way or the other should ease concerns about the potential for cost savings.

In the USA one Congressman has introduced a bill to give a US\$1000 tax credit to employees who telework for the costs of setting up and maintaining the home office (Wittman 2011). Such an approach would reduce the cost burden of setting up and maintaining the home office, with business covering the balance. This may substantially improve the business case for telework in the first year of operation, which is typically when the costs are highest.

## 6.2 Overcoming employee challenges

### Isolation from co-workers

Telework typically involves long periods of working alone for the home office employee, leading to challenges with effective communication. In order to avoid this it is important that teleworkers are vetted before telework commences to try and ensure that only those employees likely to retain effective communication when working from home are moved into telework. However even those who are considered well-suited to telework may experience some difficulty.

This challenge may be overcome through steps that facilitate interaction between the teleworker and in-office employees. One option is for part-time telework and part-time work in the office, with the more social experience that it provides (Meyer 2000). This easily allows the teleworker with enough social interaction to make the time alone less challenging, however it does reduce the benefits of telework somewhat, as many of these are driven not just by the number of individuals who telework but also the frequency with which they telework.

An alternative for those who require just a little interaction with colleagues to feel less isolated may be utilising new forms of communication. Services such as instant messaging for short incidental conversations as would occur in the office, collaborative software or videoconferencing for face-to-face contact with colleagues, will facilitate greater human contact for a teleworker than may otherwise be the case.

## Exclusion from workplace decisions

Teleworkers have noted in surveys that they have been excluded from workplace decisions because they were not physically present and in-office colleagues were hesitant to contact them and involve them in the process (Dixon 2003). While it can be easy for this to occur as a result of an incidental conversation in the office, it is important that such exclusion is limited.

To avoid the incidence of such exclusion it is important that both the teleworker and business management make clear to in-office staff that contacting a teleworker at home should be undertaken as it would if they were in the office. It is important for the smooth operation of telework that all employees understand that the teleworker is working as they normally would, and that employees should not be hesitant to contact them during business hours. Organisations using the 'status' function on instant messaging or other collaborative software can find that the employee's availability is more transparent. Again, while it reduces the benefits it may also be beneficial to have teleworkers only work from home part-time, or to work from the office on a semi-regular basis, where other technological and management solutions are not available.

Additionally, provision of communications tools—such as instant messaging that allows for brief and fairly incidental communication, collaborative software and video conferencing facilities that create a stronger sense of telepresence—will help to reduce a sense among in-office employees that they could be 'interrupting' the teleworker and encourage greater communication. Videoconferencing solutions are also important here, and should be provided to all staff (both teleworkers and in-office employees). To help keep teleworkers engaged with activities in the office, as many meetings as possible should be migrated to this platform, rather than conducted over the phone or in person.

## Inhibited career progression

There is a sense that telework leads to an 'out of sight out of mind' mentality when it comes to promotions and other opportunities, and a sense that the absence of opportunities to network or compare one's performance against that of colleagues may reduce understanding of what is required to progress. Some studies have suggested that part-time telework, or telework for one or two years before returning to more traditional ways of working are the best measure against this (Mallia 2000), however these both come at the expense of the benefits realised through telework.

The risk of inhibited career progression, whether the inhibition is real or simply perceived, can be mitigated through the teleworker making the conscious effort to continue networking with those in the office through communications technology. Teleworkers should also make themselves aware of and ensure they undertake the same performance appraisal processes as non-teleworkers and to avail themselves of training and other opportunities.

Telework policies established by governments in Europe have required that teleworkers must have the same opportunities for training and career development as non-teleworkers (Visser 2008) and Australian businesses should adopt a similar approach in their telework policies. Those involved in management-level roles should have experience with telework or, if they do not have experience, be given the opportunity to gain experience with

telework (either through teleworking themselves or through managing teleworkers), in order to ensure they fully understand what is required to ensure teleworkers are treated equally to all other staff.

### **Lack of technical assistance**

A lack of support, including technical support, is one of the more commonly identified drawbacks of telework by those who are already working from home (Scholefield 2009). Because of the delays inherent in providing remote IT assistance, it is important that teleworkers have some understanding of the basics.

Instead, basic training in the organisation's IT systems and simple troubleshooting should form part of the pre-telework training provided to employees, in order to help the employee with minor issues. It is also important that there are policies and procedures in place for a teleworker to log IT issues by email, phone or online in the same way as an employee in the office would.

To avoid the risk of unequal treatment, or a sense that not being visible can lead to poorer support, telework policies should also explicitly state that teleworkers will receive IT assistance in the same fashion as other workers. It should also be made clear to IT staff that teleworkers' IT needs must be responded to on an equal footing with those of physically present staff.

### **'Role blurring' between work and personal life**

The lack of physical separation between work and personal life can lead to difficulties keeping the two mentally and emotionally separate (Baard 2010). The same technologies that facilitate telework can also make it difficult to leave behind outside of work hours and may cause conflicts in how to allocate time (Meyer 2000). To a large extent the avoidance of this telework challenge relies upon the organisational capacity of the teleworker, however some of an individual's telework arrangements can also assist with reducing this risk.

A home office that is physically separate from the rest of the house, even if just by a closed door, will aid in defining the 'work' and 'non-work' components of the teleworker's life. Telework Australia recommend a structural separation between work and play. When in that office, the individual is defined as a teleworker, with time and effort dedicated to their employer. Family and other facets of the individuals' life are effectively 'shut out' until the door is opened. Once the teleworker leaves the home office, they should also leave behind all aspects of work life until the next period of telework.

Additionally, setting and keeping to office hours for each day of the week – even if not the conventional hours that are worked by those in the commercial office – will assist in keeping the roles separate. While the ability to balance work and other aspects of life in a less structured manner is an important benefit of telework, if this is causing conflicts between the two then re-introducing structure may be necessary. It is also important that the teleworker only be expected to undertake work at the same rate as their in-office colleagues (Visser 2008) in order to better maintain work/life balance.

## 6.3 Implementing telework

As indicated above, there are challenges to be overcome in the introduction of telework. A carefully planned, strategic approach to implementing telework can help to overcome these challenges and realise the benefits of telework.

The NSW Roads and Traffic Authority (2009) provides a highly detailed plan for moving from telework as an idea to implementation in the business. This section reviews the key points.

### Develop a business case

The first step towards introducing telework is to assess the business case. This involves an assessment of the various potential costs and benefits that will accrue under telework. There are a variety of resources available online to assist businesses with this, although it is important that this preliminary assessment is based upon the specific factors of the individual business as the average experience may not be relevant to all organisations. It is only worth pursuing the introduction of telework if the business case numbers demonstrate a potential benefit to the organisation.

If the business case suggests that there may be benefits in the firm introducing telework, then the next step may be a pilot program.

### A pilot program

For businesses that are new to telework, it may be advantageous to conduct a pilot program before a broader program is adopted. This would be useful in larger organisations, however in the case of smaller enterprises a pilot program may not be feasible. In this case the business case should be assessed more closely before moving towards a telework policy (see below). Such a pilot program may help to overcome some challenges, in particular if there is managerial scepticism about the size of the benefits or questions about managing employees.

A pilot program may include five to 10 employees in a large firm, or two to three in a smaller organisation. This provides a small enough sample to monitor the outcomes reasonably closely. A trial period of three months should be sufficient to allow time for adjustment to the new ways of working and examination of the benefits. In a large business or organisation, a steering committee should be established to oversee the pilot and latter stages of implementing telework. In a smaller organisation there may instead be a program coordinator.

There should be a budget allocated to the pilot to ensure it can be properly undertaken. Goals and performance metrics should be developed around factors such as cost savings, productivity rates of teleworking employees, travel time savings for employees, and both the business and pilot program participants should be vigilant in record keeping to ensure accurate measurement of the pilot's impact are produced.

Once the pilot program is complete and evaluation has found telework to be viable for the business, a policy should be developed for the operation of telework in the business.

## Develop a policy

A policy for telework is important to ensure that all potential teleworkers in the firm understand their rights and responsibilities upfront. This policy should incorporate information on what items the firm will and will not provide, performance expectations and monitoring, and details of what conduct may see telework entitlements revoked.

Flowing from the telework policy should be a simple, easy to understand agreement for potential teleworkers to sign before they become teleworkers to ensure understanding of requirements.

The policy should provide access for employees to telework, subject to the suitability of the role, the employees ability to work successfully without direct supervision and the suitability of the home office (does it meet OH&S requirements, will it be free from distractions etc). It is equally important that telework not be used as a substitute for remuneration for some employees—teleworkers must retain the same entitlements as comparable employees in the office would under the relevant state and federal legislation.

## Developing an evaluation methodology

Even where a pilot program has demonstrated the benefits of telework to a business, ongoing program evaluation is critical to ensuring that telework remains a positive for the business.

The evaluation methodology should look at the costs to business (which are reasonably easy to measure, but can be harder to directly attribute to telework in the case of costs avoided), benefits to employees and the productivity impact. It can be difficult for the firm to assess the impact on employees. Surveys, focus groups and interviews with teleworkers are possible means of measuring these effects.

## Identify potential teleworkers

Not all employees are equally well-suited to telework. The type of role performed by an employee, as well as certain characteristics of the individual, are important considerations (Visser 2008) for management when deciding whether an individual should be able to telework.

### *The nature of the role*

Broadly speaking, information- and desk-based roles are those best suited to telework (Mallia 2000). ATAC (2006) suggests the roles that are best suited to telework are professional, administrative and knowledge-based workers, with industries such as information, media and communications, administrative and support services, financial and insurance services and professional, scientific and technical services likely to be among the more appropriate industries.

RTA (2009) notes that the types of tasks well suited to telework are:

- computer-oriented tasks;
- telephone-intensive tasks;
- tasks that need to be undertaken without interruption; and

- report writing/creative writing.

Positions that are generally less well suited to telework are those that require physical presence such as tradespersons, labourers, and machinery operators. This means that the majority of employees in industries such as agriculture, mining, manufacturing and construction are less likely to be able to telework (ATAC 2006). Sales and personal service roles that require face-to-face customer service, including many roles in the retail trade, health and community services, cultural and recreational services and accommodation and food services industries are also less likely to be suited to telework.

However the higher speeds and new applications enabled under the NBN are likely to expand the range of roles suited to telework (IBES 2011). Applications such as high-quality and multi-party videoconferencing may open telework to those who must regularly be involved in face-to-face meetings, including some workers in sales roles. High speeds will enable those who may struggle to transfer large files on existing internet speeds, such as those working in digital media, to undertake telework. The use of advanced robotics for remote machine operation may, in the longer term, open some hands-on roles such as machinery operators to telework.

#### *The nature of the individual*

Certain characteristics are desirable in teleworkers. While some of these are things that can be taught, others are more inherent characteristics of an individual.

Generally speaking teleworkers are ideally independent and self-motivated individuals who are able to work without supervision. They require organisation skills, discipline and a strong work ethic to remain productive even when they are not being closely monitored by management. Strong communication skills and relationships with colleagues are important if the teleworker is to be able to continue to operate effectively. Solid technological skills, while not essential to telework, may aid the employee in fixing small IT issues themselves and avoid the frustration of being more remote from IT assistance.

As a general rule it is desirable for a teleworker to have most, if not all, of the above traits prior to commencing telework. Those employees who lack most of these qualities may be best off remaining in an office environment until their skills have developed further. It is however worth noting that these characteristics are based on the experience of firms and organisations to date, when telework has not been performed in the presence of a ubiquitous high-capacity communications infrastructure with the potential to do more to shrink the tyranny of distance and ameliorate employee isolation than ever before.

#### **Commencing telework and ongoing monitoring**

Once teleworkers are identified, and arrangements made with their manager for them to move into telework (including signing necessary documentation such as a telework agreement), training should be provided to the new teleworkers to aid them in the transition.

Ongoing performance monitoring of teleworking employees remains important, both for their career progression and for ensuring the teleworker is remaining productive. Heavy-handed monitoring such as use of video surveillance for teleworkers is generally not

recommended. Rather, the introduction of telework presents an opportunity for business to move all staff towards outcomes-based performance metrics, such as on-time and to-standard delivery of work, and ongoing communication with supervisor and co-workers in the office, as well as ongoing use of supervisor-employee communication.

It is also important to continue monitoring the costs and savings to the business/organisation, to ensure that telework remains advantageous. It may be difficult to isolate the benefits of telework in the business bottom line, so continued use of performance indicators to ensure objectives are being met is important.

## 6.4 Other considerations

Building a business case is an essential step before implementing a pilot program or full deployment in order to review the benefits and risks. Once a business case is established, policies and procedures must be put into place around the operation of teleworking arrangements, with coordination between IT, human resources and management all being important in order to ensure the policies are adhered to and potential benefits of telework are maximised (Riswadkar 2009).

### 6.4.1 ICT

Computers and other communication equipment make telework easy and affordable (RTA 2009). Many technological advancements over the past two decades have reduced the need for employees to be as physically present in a traditional office setting (Rane 2011). As a consequence ensuring the adequate provision of ICT infrastructure is critical for the home office to remain as productive as the traditional workplace.

Before telework is introduced, the business should establish whether they will cover some or all of the costs of ICT infrastructure to facilitate telework and, if so, what share of these costs will be covered. In the EU the employer is generally responsible for providing, installing and maintaining the necessary equipment for telework (Visser 2008) and, given the benefits of telework that accrue to the employer, it may be equitable for the employer to at least partially contribute to these costs.

The necessary equipment for the home office includes:

- A computer—generally speaking, laptops are preferable for teleworkers owing to their portability. This is particularly the case where an employee will only be teleworking part-time, as use of a laptop will mean that they only require one computer for both places of work.
- Telephone—at the simplest level, an employee can use their mobile phone to make and return calls, however if the employee's work is telephone intensive this can become very expensive. Two more advanced alternatives are use of Voice over Internet Protocol (VoIP) services which have a relatively high set-up cost but lower call costs, or full integration with the business' phone systems where the employee has a dedicated internal extension number.
- Internet connection—the internet connection must be reliable and fast enough to undertake all internet-based tasks that are part of the employee's role. Earlier technologies, such as dial-up and rudimentary broadband at 256 kilobytes per second



are unlikely to be fast enough for this. Higher speed services, including ADSL2+, quality wireless/satellite connections, and in particular the NBN, will facilitate a much broader range of applications.

- Printers/copiers/scanners—not all employees will consider these essential to their role, with many workers now able to undertake their work entirely electronically.
- Remote access—while it is possible for teleworkers to utilise email to send files to and from the main office, this is a time-consuming process and generally relies upon another employee in the office. Easier alternatives can be facilitated through remote access to files and servers, such as virtual private network (VPN) connectivity, or cloud computing.
- Video conferencing facilities—for many employees who require the ability to meet with people face-to-face, video conferencing will be an imperative communications tool.

New types of software can also be utilised in telework to increase ease and effectiveness. For example online instant messaging services will help to facilitate 'quick' conversations that would be undertaken face-to-face in a traditional workplace will make the home workplace more authentic and less isolated (Baard 2010).

## 6.4.2 Human Resources

### Industrial legislation

There is a need to review an employee's conditions of employment before telework commences (RTA 2009). The SusTel report by the UK Centre for Economic and Environmental Development found 25-75 per cent of teleworkers worked longer hours compared to when they worked from the office (RTA 2009), and there is a need to consider how the potential for additional work hours may impact upon the employment arrangement. Organisations should ensure that their arrangements with teleworkers are fully compliant with all relevant state and federal legislation with regards to remuneration, conditions and other industrial matters.

Teleworkers must still be entitled to benefit from the same rights as comparable workers at the employer's premises. They must continue to have the same collective rights as other employees, in terms of representation by trade unions and similar organisations, as well as the ability to stand for election as a employee representative (Visser 2008).

## 6.4.3 Occupational Health & Safety

### Office setup

The office should be set up safely and in a fashion that suits the employee. An ergonomically appropriate office is important in order to minimise the risk of injury to the employee. This set up should consider:

- The set up of the desk, chair and PC should ensure good posture.
- The provision of adequate lighting, heating and cooling, and ventilation.
- Whether there are any potential risks, and undertake steps to ease these risks. For example, computer cables should be carefully tied so as to avoid any risk of trip hazard, and corridors and the workspace should be clear.

Employers should ensure that they comply with relevant state and federal OH&S legislation.

It may be prudent for home ergonomic assessments, OH&S risk assessments and proper training to be required before regular telework is permitted (Riswadkar 2009). This should cover the entire home as the space the employee will be utilising during work hours. Indeed, in the UK and Ireland employers are required to undertake a health and safety risk assessment to ensure that a teleworker's home workstation complies with all legislation (Visser 2008). Such a requirement would be prudent for Australian businesses to minimise the risk of workplace injuries in the home office.

### **Workers compensation arrangements**

Telework is unlikely to have an effect upon the cost of workers' compensation insurance, as typically these premiums are based upon the total wage bill for the firm. However there is a need for some caution in the case of home offices as the working day is less clearly defined. Dixon (2003) notes that WorkCover legislation only applies in work situations during specified work times. However often the teleworker's hours of work are 'fuzzy' and, given the teleworker has no impartial witnesses, there may be issues with claims as required.

To minimise the potential for telework issues with workers compensation the employee's telework agreement should clearly state their working hours and break times and document procedures on how to report accidents (RTA 2009). Employers should ensure that they meet the requirements of relevant state and federal legislation in the event of a workplace accident during telework.

In some states there are some minor additional requirements. In the case of NSW, the *Occupational Health and Safety Regulation 2001* states that the employer must provide a first aid kit at each place of work. This is an additional set-up cost of telework incurred for each employee.

Policy implications: Best practice recommendations

The NBN will aid in overcoming many of the existing barriers such as the standard of technology in the home, isolation of employees and the unsuitability of occupations to telework. The ubiquity of the NBN will be important for facilitating collaborative work, as noted by the United Nation's Broadband Commission, while higher speeds may open telework to more occupations and individuals who may not be ideally suited under current technology standards.

Careful planning by businesses to ensure they implement telework to maximum effectiveness for their unique case is important. Government can assist through providing information that can help organisations establish how they can make the most of telework.

Businesses should consider how telework suits their unique circumstances before implementing telework, and plan around maximising the benefits.

Career development strategies within a firm should assist staff in developing the skills required to move into telework in order to help maximise the potential for the business to utilise telework.

All business policies should be developed and revised with telework in mind, and all should apply to staff equally, regardless of whether or not they telework.

Government can assist with encouraging the uptake of telework through providing a range of relevant resources for business online. As well as covering issues such as establishing a business case and the steps to implementing telework, this should cover common concerns such as worker's compensation, OH&S and other industrial relations issues that may be confusing to an employer.

# 7 Conclusions

## 7.1 Future directions

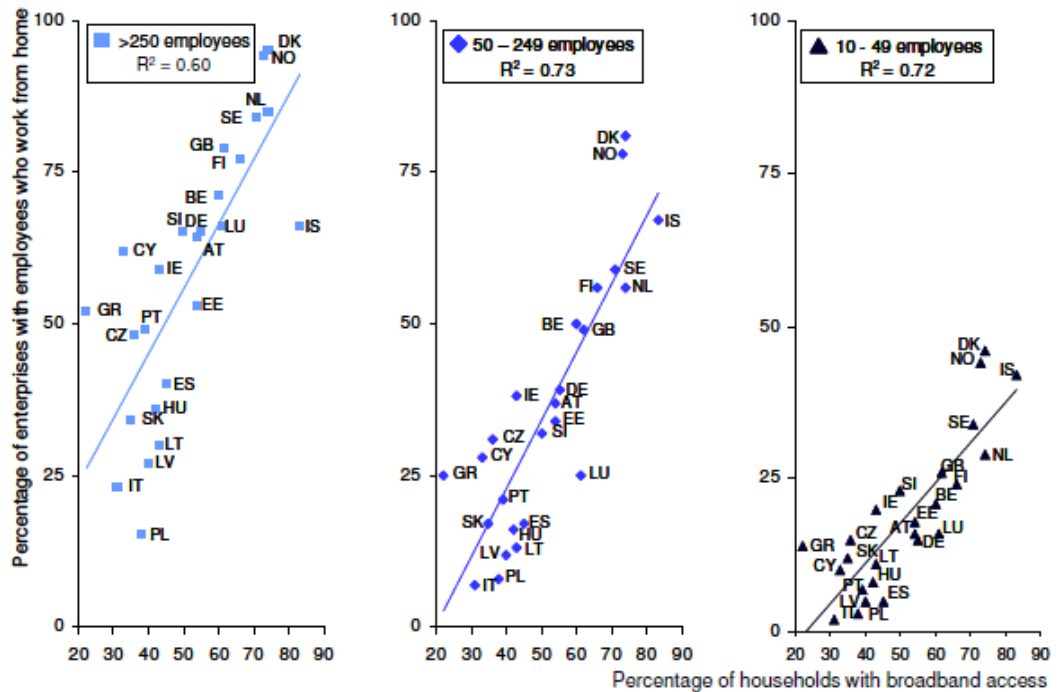
As has been seen through this report, the NBN has the potential to bring many additional benefits from telework, through increasing the efficiency of existing telework, and through broadening the scope for a wider range of Australian workers to telework. This occurs both through increased speeds and through new applications and ways of doing business, utilising multi-party videoconferencing, large file transfer and a range of other future applications, many of which are as yet unknown (IBES 2011).

The demanding nature of some applications under telework, such as video-conferencing and high speed file transfer, means that there is a need for a constant and reliable high-bandwidth internet connection. While those who live close to the telephone exchange may be able to undertake these using current ADSL technologies, those who live further away and face speed losses from distance are unlikely to be able to fully access these benefits (Cornick 2011). The 'designed for purpose' nature of the technologies used to connect people to the NBN mean that the applications important for telework will become more reliable.

The standard of technology is known to be an important driver of telework. In Europe the Berkman Centre (2010) reports that broadband penetration rates correlate with the rate of telework, a (see Chart 7.6). As the level of broadband penetration in a country increases, so too does the rate of telework.

This relationship is also stronger with small and medium businesses, with businesses with fewer than 49 employees showing a relationship of close to a one percentage point increase in telework update for every two percentage points increase in household access to broadband. This may be attributable to the fact that smaller businesses do not have the resources available to initiate special programs to make telework viable, but where the technology is 'brought to them' as in a broadband network they are able to adopt. This implies that the NBN may be more important for facilitating telework in smaller businesses.

Chart 7.6: Household broadband penetration and telework rates



Source: Berkman Center 2010

Chart from page 26 of full *Next Generation Connectivity* report, available in clearer form online via [http://cyber.law.harvard.edu/sites/cyber.law.harvard.edu/files/Berkman\\_Center\\_Broadband\\_Final\\_Report\\_15Feb2010.pdf](http://cyber.law.harvard.edu/sites/cyber.law.harvard.edu/files/Berkman_Center_Broadband_Final_Report_15Feb2010.pdf)

## 7.2 Key economic outcomes

An increased rate of telework will generate several important benefits to the economy. Increased labour force participation, particularly among groups facing relative disadvantage in the workplace, such as people with a disability, carers and those living in regional areas, will help to increase total economic output and productivity. Overall this outcome provides strong policy motivation for government support of telework through labour force participation mechanisms.

Even without the increased labour force participation, telework brings economy-wide productivity benefits. These occur through the time savings involved in telework, and the reallocation of time from travel to work. Overall this will lead to an increase in economy output for the same quantity of workers.

Government expenditure on infrastructure can also be avoided owing to the reduced need to upgrade networks due to capacity concerns. Expenditure is primarily deferred rather than avoided altogether, however maintenance may be required less frequently, and this is a real and permanent reduction in government costs.

Overall these outcomes would improve the budget bottom line via increased tax receipts from stimulating economic growth and employment, and avoiding expenditure on social welfare payments to those unable to work and infrastructure to increase transport network capacity.

## 7.3 Policy directions

Telework has great potential in Australia if widely and effectively implemented. A number of policy directions have emerged from this study.

### Summary of government policy considerations for telework in Australia

The current implementation of telework in Australia (limited uptake, on a fairly ad hoc level and for only a few hours per week) means that the benefits are not being fully exploited. Policies to encourage more regular telework would assist in realising the benefits to employer, employee and society as a whole.

The importance of broadband, and specifically the NBN, in increasing the accessibility of telework and achieving the economic and social benefits it unlocks, lies in network speed, capacity and ubiquity, as well as the increased range of occupations that may become telework-ready.

Government should lead in its own operations through the adoption of telework in government agencies. This will provide a signal to the private sector and examples of how to best introduce telework. Further, given the size of government as an employer, widespread telework through government agencies will make the practice significant enough that it will directly impact labour markets.

As well as providing the tools for telework through the NBN, government can play a role in helping organisations to establish how they can make the most of telework. Many of the current challenges of telework are based around perceptions rather than reality, and can be overcome through careful planning and execution of a telework strategy for each business' unique circumstances. Government provision of information for businesses may assist with this.

The range of potential outcomes means that there are merits in pursuing telework across a range of government agencies. Those agencies engaged in workplace relations and participation, environment and climate change, transport and infrastructure, and regional development, as well as those responsible for budget bottom lines are potential stakeholders.

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# Appendix B: Telework using the NBN

The National Broadband Network (NBN) will substantially increase the scope for telework in Australia. It will do this in two ways:

- The quality and ubiquity of the network and the implications for the home office.
- The specific applications that will become available through higher speeds.

## Quality and ubiquity

Under the NBN, 93 per cent of Australian households will receive internet speeds of up to 1 Gigabytes per second through a fibre to the premises connection, with the remainder to receive services of at least 12 megabytes per second. In addition to ubiquity, the 'designed for purpose' nature of the network will enable employers to have confidence in the quality of internet service a teleworker receives at home. Historically this has been a constraint of telework as uncertainty over whether the employee would experience the same internet service level at home (or certainty that the service was poorer) compared with the office meant that employers could not be confident that their employee would be able to remain as productive when working from home.

The use of 'next generation network' technologies, incorporating features such as quality of service and committed information rates—unavailable on current broadband networks—provide certainty to employers and teleworkers alike. Although users of NBN's fibre speeds will have access to greater speeds, these reliability and quality features will be available to all Australian premises connected to the NBN. This means that the teleworker's level of broadband service can be far more consistent than was previously the case. Ubiquitous access to the NBN's high capacity service will create a network that users can reliably depend on to connect them with other users that have similar communications capacity.

In the Broadband Commission's second update, the United Nations (2011) notes that ubiquitous broadband access is important in facilitating collaborative work if all parties are to have equal ability to contribute, and that this has profound possibilities in knowledge-based industries. This is one way in which the NBN will help to increase the benefits that are achievable using telework.

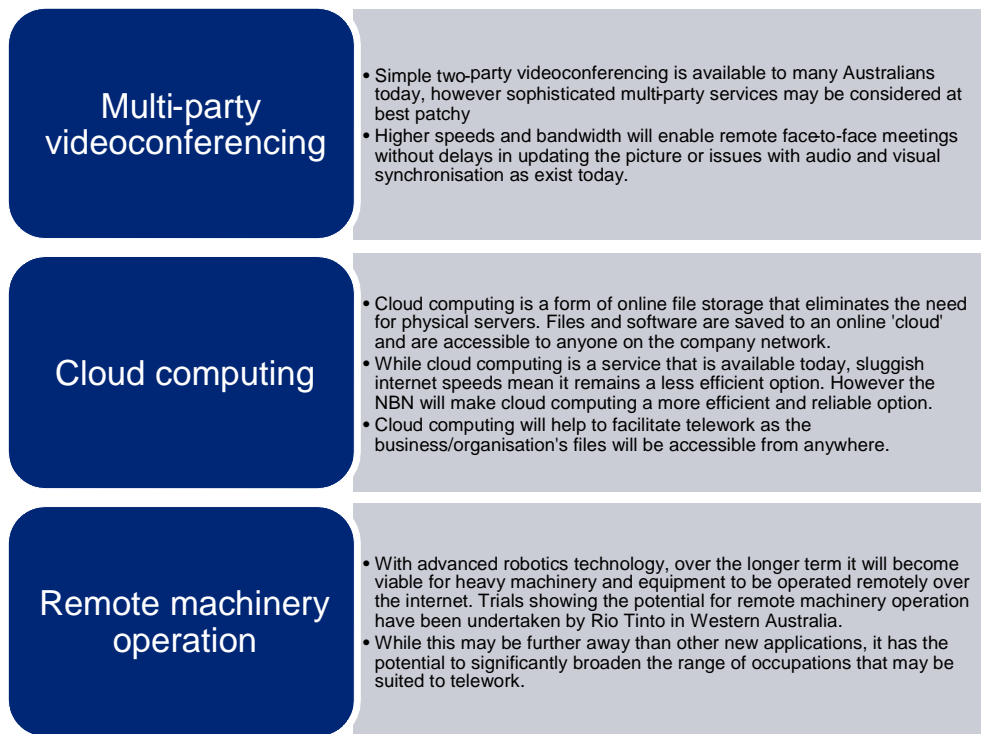
## Specific applications

The increase in the availability of high-speed broadband during the past decade has enabled Australian businesses currently teleworking to pick from an expanding market of collaborative software and online tools that combine basic video-conferencing in immersive environments with recorded chat functionality, the ability to work any number of files simultaneously in real-time and share and transfer them securely.

As well as facilitating existing internet applications at faster speeds and stability than are currently available, the increased capacity means a range of additional applications that are not viable under existing internet services in Australia will become available. These

additional applications will broaden the scope of telework as it becomes possible to remotely perform a wider range of tasks from home or from sites close to their home. Some examples of new applications that will facilitate telework are detailed below.

**Figure B.1: Telework applications under the NBN**



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